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ABSTRACT

This comparative study of traditional and transformaticnal approaches to the syntax of standard Russian proposes the superiority of analysis in terms of possible and impossible transformations, thereby revealing the existence of a level cf linguistic form superior to that of simple morphophonemic description. Five classes of word-combinations of verb and instrumental substantive labeled objective, temporal, spatial, determinative-circumstantial, and causative are discussed in terms of traditicnal analysis. Transformational theory and procedural methcds in the analysis of a similar linguistic corpus are reviewed and applied to a series of Russian sentences. Extensive use is made of linguistic examples, and tables illustrating transformations are included. (RL)

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TRANSFORM ANALYSIS OF RUSSIAN INSTRUMENTAL CONSTRUCTIONS

DEAN STODDARD WORTH

0. INTRODUCTION. The traditional approach to the syntactic description of standard Russian has been based on the morphological definition of word classes and consisted primarily of a more or less exhaustive listing of the various types of word-combination *(slovosočetanie)* and sentence into which members of these classes can be combined, e.g. substantive in various cases modifying a substantive, modifying a verb, etc. Such morphologically defined phrases are tacitly assumed to be the smallest formally characterized class above the word level. The morphological description by itself, however, produces an obviously superficial picture of Russian syntax, since there are in most cases from a few to many intuitively recognized different kinds of relation expressed within one and the same morphologically defined phrase type, e.g. in English the difference between "John was eating all the cheese" and "John was eating all the time," or in Russian the following sets of verb+substantive in the instrumental case: *rukovodit batal'onom*[1] 'is in charge of a batallion', *mašet platkom* 'waves his kerchief', *priezžael starikom* 'arrives an old man', *voet šakalom* 'howls like a jackal', *čitael večerom* 'reads in the evening', *idet lesom* 'walks through the forest', *govorit šopotom* 'talks in a whisper'. With the concept of form thus restricted to that of morphological description, one is faced by a multiplicity of meanings

[1] Russian forms are given in the standard transliteration. The English translations are given as an aid to readers unfamiliar with Russian, but since, like all translations, they compromise between literalness and literacy, the reader is hereby warned against interpreting Russian syntactic structure on the basis of English translations. For example, one cannot equate the active—passive transformation in English with the $S^1 V S^2 \rightarrow S^2$ was V_{en} by S^1 (see footnote 31 for symbols) transformation of Russian, since the latter turn out to be genuine passives only in a minority of cases (for a traditionally couched but penetrating discussion of this problem, see V. V. Vinogradov, *Russkij jazyk*, Moskva-Leningrad, 1947, pp. 629-641).

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expressed by a single form, and has only the choice between (1) relegating all differences among units of like morphological structure to the realm of the lexicon and thus (assuming the lexicon has nothing to do with grammar) considering these differences none of the linguist's concern,[2] and (2) attempting to account for the intuitively recognized relational varieties within the morphologically defined class by dividing the latter into subclasses on a purely semantic basis. The latter solution is adopted, for example, by the latest full syntactic treatment of Russian, the second volume of the new grammar of the Soviet Academy.[3] For purposes of comparison we shall first outline the treatment of Russian instrumental constructions in this work.

0.1. TRADITIONAL ANALYSIS. The Soviet Academy grammar divides word-combinations of verb and instrumental substantive modifier into five major classes (one of which is as a matter of fact already archaic, cf. below), on the basis of the kind of relation expressed between verb and substantive. These five classes are labeled objective, temporal, spatial, determinative-circumstantial, and causative; most of them are divided into a number of subclasses determined by a variety of criteria, mostly semantic. The largest of the five major classes, in which objective relations are expressed, is defined as expressing "an action and the instrument by means of which this action is accomplished,"[4] e.g. *rubit' ɫoporom* 'chop with an axe', *pisat' černilami* 'write in ink'. A subclass contains verbs "with the meaning of allotment, equipment,

[2] The work that goes the farthest in the direction of eliminating nonformal categories is M. N. Peterson's concise *Sintaksis russkogo jazyka*, Moskva, 1930.

[3] Akademija Nauk SSSR, Institut jazykoznanija, *Grammatika russkogo jazyka, II, Sintaksis*, parts 1-2, Moskva, 1954. The most important earlier works with the same general approach are A. A. Šaxmatov, *Sintaksis russkogo jazyka*, 2nd ed., Leningrad, 1941, and A. M. Peškovskij, *Russkij sintaksis v naučnom osveščenii*, 7th ed., Moskva, 1956. The latest syntactic works repeat on a smaller scale the same semantic approach, e. g. E. M. Galkina-Fedoruk, ed., *Sovremennyj russkij jazyk. Sintaksis*, Moskva, 1957, A. N. Gvozdev, *Sovremennyj russkij literaturnyj jazyk. Čast' II. Sintaksis*, Moskva, 1958. The Academy grammar discusses instrumental constructions in different sections: as word-combinations, i. e. *slovosočetanija* (*Grammatika russkogo jazyka*, II, 1, 132ff.), as parts of sentences *(predloženija)*, especially after copulative and semi-copulative verbs such as *byt'* 'be', *kazat'sja* 'seem', *stat'* 'become', etc. (*op. cit.*, II, 1, p. 427ff.), and as various kinds of circumstantial description, i. e. *obstojatel'stvo* (*op. cit.*, II, 1, p. 572ff.); some constructions appear in more than one section, e. g. *rasstalis' soldatami* 'they parted as soldiers' (p. 137), *rasstalis' bol'šimi prijateljami* '(we) parted great friends' (p. 433).

[4] *Grammatika russkoga jazyka*, II, 1, 132.

provision in the broad sense" and substantives "signifying the object with which someone is provided or not provided,"[5] e.g. *nagradil' ordenom* 'confer a decoration', *snabdil' den'gami* 'provide with money', *obdelil' nasledstvom* 'deprive of an inheritance'. Another subclass contains verbs which "name a movement" and substantives which name "a part of the body or an object organically connected with the actor,"[6] e.g. *maxal' rukoj* 'wave one's arm', *topal' nogami* 'stamp one's feet'. Should verb and substantive be of more abstract meaning, they form "combinations, in which in the dependent word (= modifier) the meaning of instrument is somewhat weakened and is replaced by the more general meaning of indirect object,"[7] e.g. *udivil' umom* 'astonish by one's wit', *ugrožal' vojnoj* 'threaten with war', *umoril' golodom* 'starve (someone) to death' ('to kill by hunger'). Combinations expressing the relation labeled "indirect object" are themselves divided into a number of subgroups, the first of which contains verbs "signifying filling, satiation" and substantives naming "the object with which something is filled,"[8] e.g. *nabit' senom* 'stuff with hay', *ispolnil'sja nenavisť ju* 'become filled with hate', *nagruzil' poručenijami* 'burden with errands'; this subgroup is stated to contain words of both abstract and concrete meanings, which appears to contradict the subclass definition above.

A special paragraph is accorded those indirect object combinations in which the verb means "possession, internal enthusiasm, constant occupation,"[9] e.g. *vladel' francuzskim jazykom* 'speak French', *voshorgal'sja druz'jami* 'be delighted with one's friends', *zanimal'sja sportom* 'engage in sport', *ljuboval'sja prirodoj* 'admire nature'; in some cases, the instrumental substantive may at the same time name "the source of the feeling or experience expressed by the verb,"[10] e.g. *gordil'sja pobedoj* 'be proud of a victory', *plenjal'sja krasotoj* 'be captivated by beauty'. A further subclass (presumably still, but not explicitly stated as, expressing indirect objects) consists of substantives "upon which an activity is spent" and one of the seven verbs *vedat'* 'manage', *zavedovat'* idem,

[5] *Op. cit.*, 133.
[6] *Loc. cit.*
[7] *Op. cit.*, 134.
[8] *Loc. cit.*
[9] *Op. cit.*, 135. The semantic unity of this group is not as obvious to this writer as it was to the compilers of this grammar.
[10] *Loc. cit.* It is not clear how one is to distinguish between this type of combination and those of the fifth major class, labeled causative.

komandoval' 'command', *pravil'* 'rule, govern', *rasporjažal'sja* 'deal with, dispose of', *rukovodil'* 'direct', *upravljal'* 'govern'. The final subclass of the class of objective relations consists of combinations formed with either "a verb in the form of the passive voice" or "a passive participle" combined with an instrumental substantive which "names the producer of the action—a person or thing,"[11] e.g. *Činy ljud'mi dajutsja* 'ranks are given by people' (Griboedov), *Vražda umirit'sja vlijan'em godov* '(Your) enmity will be calmed by the influence of the years' (Nekrasov), *Vse pokrylo bylo snegom* 'Everything was covered by snow' (Puškin), *Vse zdes' sozdano nami* 'Everything here has been created by us' (Nikolaeva). The awkwardness of including these obviously passive transforms in the objective class is apparently conceded by the remark that "in these cases the forms of combination are closely connected with the structure of so-called passive constructions and of a particular type of verbal sentence."[12]

The second major class in the Academy grammar consists of combinations expressing temporal relations. This class is divided into two subclasses, this time by purely morphological criteria. The first subclass contains substantives in the instrumental singular designating time of day or season of the year, and obligatorily accompanied by agreeing adjective or governed substantive modifiers, e.g. *on uexal glubokoj osen'ju* 'he left at the very end of autumn' ('in deep autumn'), *slučilos' pozdnej noč'ju* '(it) happened late in the night'.[13] A subgroup contains substantives

[11] *Op. cit.*, 136.

[12] All such combinations of passive participle and instrumental substantive are perfectly straightforward transforms of one of two types of phrase: (1) nominative substantive+transitive verb+accusative substantive, e. g. *Vse zdes' sozdano nami* 'Everything here has been created by us' ← *My sozdali vse zdes'* 'We created everything here'; (2) phrases already containing instrumental substantives and discussed elsewhere in this paper, e. g., *kniga, prikrytaja trjapočkoj* 'the book, covered by a rag' ← *X prikryl knigu trjapočkoj* 'X covered the book with a rag'. The first of these two transformation types corresponds exactly to the active—passive transformation in English (on the latter, see Noam Chomsky, *Syntactic Structures*, The Hague [1957], pp. 77ff.; Robert B. Lees, review of Chomsky, *Language* 33.375-408 [1957], esp. 388, and Zellig S. Harris, "Co-occurrence and Transformation in Linguistic Structure," *Language* 33.283-340 [1957], esp. 325ff.; further literature will be found in these works) and differs from the second just as "The wine was drunk by the guests" differs from "John was drunk by midnight" (examples from Chomsky, 80).

[13] Soviet linguists consider all such words to be adverbs when they occur without modifiers, e. g. *zimoj* 'in winter', *noč'ju* 'at night'. However, there seems to be no good reason for considering forms such as +*osen'ju*, +*večerom*, etc. to be adverbs but the second half of the forms *glubokoj*+*osen'ju*, *pozdnim*+*večerom* to be substan-

(animate, although this is not mentioned in the grammar) naming age, occupation, or social status in which the subject of the verb is placed at the time of the action, e.g. *on uexal rebenkom* 'he left a child' ('was a child when he left'), *rasstalis' soldatami, a vstrelilis' polkovnikami* 'they parted as (simple) soldiers, and met (again) as colonels'; that this subgroup does not belong here is proved by the fact that it not only does not have to have, but in fact almost never does have, an adjective or substantive modifier of the instrumental substantive. The second subclass of temporal combinations contains substantives in the instrumental plural, which "name an action, repeated from time to time and lasting throughout the course of the period of time named by the substantive,"[14] e.g. *Aleksej celymi dnjami prigljadyvalsja k Komissaru;* it is not clear just what is different in this second subclass, apart from the plural morphemes and their meaning.

The third major class consists of combinations expressing spatial relations. These contain "a verb, signifying motion (and) a substantive in the instrumental naming a place, a space, along which the motion is directed,"[15] e.g. *probralsja ogorodami* 'he made his way through the back gardens', *exal lesom* 'he was riding through the forest'. Should the verb be other than a verb of motion, "the combination expressing spatial relations takes on the nuance of a temporal meaning,"[16] e.g. *Dorogoju stali bit'* 'Along the way they began to beat (him)' (Šoloxov).

The fourth major class, in which determinative-circumstantial *(opredelitel'no-obstojatel'stvennye)* relations are expressed, contains substantives which "name the mode *(sposob)* of accomplishment of the action named by the verb,"[17] e.g. *zapel vysočajšim fal'cetom*

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tives, since these forms occur in identical environments and one is always free to add or subtract the adjective modifier (transformations of the type T: ø → F, T: F → ø, cf. 0.221). In our opinion they are obviously a special subclass of substantives, formally characterized by (1) the fact that they can modify in the accusative case non-transitive verbs in *-sja*, e.g. *on otdyxalsja vsju zimu* 'he rested all winter long' and (2) in certain environments they can be modified only by a limited number of quantifying adjectives (restrictions on the transformation T: ø → A, cf. 0.221), e.g. *on vernulsja pozdnej osen'ju* 'he returned in late autumn' cannot → **on vernulsja pozdnej, xolodnoj, no vse-taki dovol'no prijatnoj osen'ju* 'he returned at a late, cold, but nonetheless rather pleasant time of autumn' (note that the English restrictions rather parallel the Russian).

[14] *Grammatika russkogo jazyka*, II, 1, 138.

[15] *Loc. cit.*

[16] *Loc. cit.*, fn.

[17] *Op. cit.*, 138-39.

'began to sing in a very high falsetto' (Turgenev), *Tanki goreli golubym plamenem* 'The tanks were burning in blue flame' (Ketlinskaja).[18] A subclass contains substantives which "signify the mode of completion of the action, appearing for the sake of comparison;"[19] here the grammar makes one of its few tentative steps toward the analytic use of transformations, e.g. *lečet rekoj* is compared with *lečet, kak reka* 'flows like a river'. In another subclass, the substantive "can characterize the mode of completion of the action from the quantitative side,"[20] e.g. *letjat stadami plicy* 'in flocks fly the birds' (Krylov), *kolorye sypal on meškami* 'which he poured by (whole) sacks' (Gogol'). Only a note mentions a particular type of determinative-circumstantial combination in which "the dependent substantive is by its lexical meaning close to the meaning of the governing verb,"[21] e.g. *izučajuščim vzgljadom ogljadel* 'looked about with a studying glance' (Ketlinskaja), *Bystrymi šagami ona šla* 'With quick steps she went' (Nikolaeva).[22]

The fifth major class, expressing causative relations, contains substantives which "signify a manifestation or state which has conditioned the action named by the verb."[23] Only two archaic examples are given, *Osel moj gluposť ju v poslovicu vošel* 'My donkey by (his) stupidity has got into the fable' (Krylov), and *Slučalos' li, čtob vy... Ošibkoju dobro o kom-nibud' skazali?* 'Has it occurred that you... by mistake said (some) good of someone?' (Griboedov); it is noted that such combinations are being replaced in modern Russian by constructions with *po* and the dative or *iz-za* or *ot* and the genitive, e.g. *sdelal' po ošibke* 'do by mistake', *otstael iz-za leni, ot nevnimanija* 'lags behind because of laziness, from inattention'.[24]

0.2. Transformation Analysis. The haphazard quality of the traditional classification outlined above is obvious. The

[18] The grammar does not mention the essential structural fact that in almost all such combinations there is an obligatory adjective modifier of the instrumental substantive. Note for example the impossibility of **tanki goreli plamenem* 'the tanks were burning in flame'. Cf. footnote 22 below.

[19] *Op. cit.*, 139.

[20] *Loc. cit.*

[21] *Loc. cit.*, footnote.

[22] This time the need of modifiers is mentioned (cf. footnote 18 above).

[23] *Op. cit.*, 139f.

[24] On the applications of transformation analysis to diachronic syntax, see 0.311 and fn. 44 below.

present paper suggests an entirely different approach to this same problem of classification, an approach based nearly as exclusively on form as the traditional approach was based on meaning.[25] The technique offered here consists fundamentally of examining each unit to be classified from two points of view, first that of what it is (the traditional morphological classification, valid as far as it goes), and then that of what it can become, of what specific changes can and cannot be wrought upon it. These changes will be called transformations, conforming to the terminology used by Chomsky and Harris,[26] but it is to be noted that this paper attempts to use these transformations for one restricted purpose only, namely to classify otherwise identical phrases. It is not offered as one ready-made section of a complete transformation syntax of Russian. The working out of such a syntax is a different and more complicated operation than that attempted here, although it is hoped, of course, that the problems and solutions encountered in the present paper may contribute to the eventual development of such a full-scale syntactic description.

0.21. MORPHOLOGICAL CLASSIFICATION. Transformation analysis proceeds in two steps: (1) a preliminary morphological classification of phrase types; (2) a transformation classification of subtypes within each morphologically defined phrase type. The preliminary morphological classification is based on a number of phrases occurring in a given corpus.[27] It presupposes that (1) we know all the major word classes of the language in question and (2) we can recognize the class membership of all words occurring in our given phrases.[28] Each phrase is described as a string of class members, each of which expresses certain grammatical

[25] For further comparison of these two approaches, see 7.0.

[26] See footnote 12. The present writer made a few brief steps toward the use of transformations in syntactic analysis in his unpublished dissertation, "A Contribution to the Study of the Syntactic Binary Combination in Contemporary Standard Russian," Harvard University, 1956.

[27] The units analyzed here were culled from some 16,000 syntactic combinations excerpted from Soviet literature by collaborators on the Russian Language Research Project directed by Professor Roman Jakobson of Harvard University and the Massachussetts Institute of Technology and supported by the Rockefeller Foundation, whose help is gratefully acknowledged. This material was supplemented by instrumental constructions taken from the works cited in footnote 3 above and from D. N. Usakov, ed., *Tolkovyj slovar' russkogo jazyka*, I-IV, Moskva, 1935-40.

[28] In a highly inflected language like Russian, class membership can in most cases be determined by purely morphological criteria; none of the cases where such determination is impossible is pertinent to the present investigation.

categories (knowledge of which is also presupposed), e.g. the phrase "The dog was chewing the bone" might be described as $NP_{sing.}$ animate+$V_{sing.}$ past progressive+$NP_{sing.}$ inanim.

0.211. REDUCTION. The phrases which actually occur in any given corpus contain many items (groups of words, or individual morphemes) which are superfluous to the particular constructions being investigated. To avoid cluttering the preliminary morphological classification with irrelevant details, all actually occurring phrases are first reduced to the structural essentials necessary for further analysis. There are two kinds of reduction. First, all modifiers are eliminated from endocentric constructions,[29] excepting only those very units which we are interested in classifying. For example, should we be interested in phrases containing "by+NP" in English ("by John," "by moonlight"), which we find to occur in the sentences "The biggest fish of the season was caught by old John Davis last night" and "All the cargo was unloaded from the ships by moonlight because of the impending strike," we reduce these sentences to "The fish was caught by John" and "The cargo was unloaded by moonlight." Similarly, the Russian phrase *Bol'šaja gostinnaja komnata v dome Ivanovyx uže napolnjalas' tolpoj ženščin i detej* 'The big living room in the Ivanovs' house was already being filled by a crowd of women and children' can, if we are interested in the instrumental substantive *tolpoj* 'by a crowd', be reduced to *komnata napolnjalas' tolpoj* 'the room was being filled by the crowd' without losing anything essential to the construction we are trying to analyze.[30]

The second step of reduction consists of eliminating from the description all those grammatical categories which can be shown to be irrelevant to the transformations to be effected. This second elimination, although in practice based on intuition in many cases, can always be justified by a rigorous procedure which puts the given phrase through all possible transformations and only then eliminates as irrelevant those categories which remain constant throughout all transformations and which can be varied freely without either increasing or restricting the number of possible transformations. We will find, for example, that the categories

[29] See Leonard Bloomfield, *Language*, New York, 1933, p. 194f.

[30] Within the framework of transformation syntax, this process of reduction can itself be considered a series of transformations of the forms F^1, F^2 etc. to zero (T: $F^1 \rightarrow o$ etc.); the opposite process can then be called expansion and considered a series of transformations T: $o \rightarrow F^1$, T: $o \rightarrow F^2$, etc. Cf. 0.221.

"tense" and "number" are irrelevant to the active—passive transformation in English, and if dissatisfied with our intuitive perception of this fact, we can prove it by letting F=an active sentence and F′ =the passive transform thereof and noting that the relation between F and F′ is identical in all cases of F → F′, regardless of which morphemes of tense or number happen to occur, e.g.

John saw the boy → The boy was seen by John
John will see the boy → The boy will be seen by John
John saw the boys → The boys were seen by John

etc. Similarly, the relation between F and F′ remains constant in the Russian examples:

tolpa napolnjael komnatu 'the crowd fills the room'
→ *komnata napolnjaetsja tolpoj* 'the room is filled by the crowd'

tolpa napolnjael komnaty 'the crowd fills the rooms'
→ *komnaty napolnjajutsja tolpoj* 'the rooms are filled by the crowd'

tolpa napolnjala komnatu 'the crowd was filling the room'
→ *komnata napolnjalas' tolpoj* 'the room was being filled by the crowd'

etc., which entitles us to eliminate tense and number from consideration as far as this particular transformation is concerned.

Once the phrase has been reduced to its structural essentials, it can be represented by a string of symbols expressing class membership and relevant grammatical categories,[31] e.g. in English we will write:

John caught the fish
→ The fish was caught by John as S^1 V S^2 → S^2 isVen byS^1

and in Russian:

[31] The following symbols are used in this paper: S_n, S_g, S_a, S_i = substantive in the nominative, genitive, accusative and instrumental cases respectively, pS = preposition+governed substantive; A = adjective (same case subscripts as for substantives), Ao = zero (adverbial) form of adjective; V = verb, V_s = so-called "reflexive" verb in *sja* or *-s'*, $V_.$ = perfective aspect verb, Vo = "impersonal" verb in neuter past or 3d sing. nonpast, V = "anonymous" or subjectless verb in plural past or 3d plural nonpast, # = zero nonpast form of *byl'* 'be' or any zero form, *byl-* = any past form of *byl'*; o = absence of a form (opposed to its presence in a particular construction); F = any form (single word, phrase, etc.), F′ = a transformational variation of F; F^1, F^2, F^3 = instances of F; NP = Noun phrase; superscript numerals = consecutive occurrences of members of a single class, e.g. S^1, S^2 = consecutive substantives;

tolpa napolnjael komnatu
→ *komnata napolnjaetsja tolpoj* as S^1_n V S^2_a → S^2_n V_s S^1_i

All phrases which have been reduced and symbolized can then be classified into groups of like morphological form. This preliminary classification obviously throws together phrases of different structure and meaning, e.g. the class S^1 isVen byS^2 includes "Mary was kissed by moonlight" as well as "Mary was kissed by John". It is the job of transformation analysis to describe the formal distinctions between such morphologically identical phrases.

0.22. TRANSFORMATION OPERATIONS. All reduced phrases are then tested to see in which ways they can and cannot be transformed, and each class of morphologically identical phrases is divided into subclasses according to the various sets of transformation which obtain for the phrases of this class.[32]

0.221. TYPES OF TRANSFORMATION. There are a number of different types of transformation, not all of which are equally pertinent to the present investigation. Most important for our purposes are what may be called intraclass transformations, effected within a morphologically determined form class, e. g. substitution of a group "preposition+substantive" for a substantive in English or substitution of one case for another in Russian, e.g. T: S_n → S_a *komnata* → *komnatu*, or the change of active to passive verb forms in either language, e.g. T: V → isVen "bit" → "was bitten" or T: V → V_s *napolnjala* → *napolnjalas'*. Addition and elimination of forms are most conveniently represented as transformations from and to zero units (T: ø → F, T: F → ø), since in such cases the presence of a form in one of two transforms is correlated with its absence in the other. Other types of transformation are of lesser importance for this paper.[33] Individual transformations will be described as they occur.

→ = is transformed to, ← = is transformed from; + and — = dividers between members of a string (graphic device; no grammatical significance); * = impossible form; WO = word order. Other symbols will be explained as they occur in the text.

[32] Cf. 7.1 for some of the implications of these operations.

[33] We shall mention interclass transformations, which shift a word from one form class to another (*kurit'* 'to smoke' → *kuren'e* 'smoking', *zelenyj* 'green' → *zelenet'* 'to show green', etc.) and are of great importance for problems of complete syntactic description (v. J. Kuryłowicz, "Dérivation lexicale et dérivation syntaxique (contri-

Transformations can be described either individually or, when they imply each other, as complete sets, or phrase transformations. The active—passive transformation in English, for example, consists of three individual transformations T: V → isVen, T: S^1 → byS^1, and the word-order transformation (difficult to symbolize) which has the effect of changing the places of S^1 and S^2; these three transformations imply each other and can be written as a single phrase transformation:

S^1 V S^2 The dog bit the man
→ S^2 isVen byS^1 → The man was bitten by the dog.[34]

0.222. TESTING PROCEDURES. The method by which it is determined which transformations can and which cannot be applied to a given phrase can be formulated in rigidly systematic terms: given a phrase consisting of the words X+Y+Z, we apply each possible intraclass transformation to X and note what if any transformations must be applied to Y and Z if the result is to be a grammatical phrase; the same procedure is then repeated with Y and Z. For example, given the phrase "The dog bit the man", we can if necessary go through the procedure of applying, e.g., T: S^1 → byS^1 ("the dog" → "by the dog"), and note that if we also apply T: V → isVen and the word-order reversal of S^1 and S^2, we obtain the grammatical phrase "The man was bitten by the dog", whereas transformations producing "from the dog", "with the dog", etc. cannot result in grammatical phrases no matter what is done to V and S^2. Similarly, in Russian, given the phrase *tolpa napolnjala komnatu* 'the crowd was filling the room', we can apply T: $S^1{}_n \rightarrow S^1{}_i$ and obtain the grammatical phrase *komnata napolnjalas' tolpoj*, provided we also apply T: $S^2{}_a \rightarrow S^1{}_n$ and the same word-order reversal as in the English example above.[35] In practice, such rather tortuous procedures are often developed to explain the intuitive jump from one grammat-

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bution à la théorie des parties du discours)," *Bulletin de la Société de Linguistique de Paris*, XXXVII, 2, [1952] pp. 79-92), but which have only occasional significance for this paper (cf. 2.1211, 2.1222); word-order transformations are of more importance in English than in Russian, where their use is primarily stylistic (*ja znal èto* 'I knew that' → *èto ja znal* 'I knew *that*', etc.). It should perhaps be noted that all transformation operations in Russian presuppose a set of morphophonemic rules which (by making verb agree with subject, etc.) will produce grammatical phrases from the transforms produced by the transformation rules.

[34] Tense is irrelevant in this transformation; cf. 0.211.

[35] Such procedures are considerably less artificial in Russian, the elaborate case system of which makes possible many intraclass transformations for each substantive.

ical phrase to another; i.e., one usually proceeds by whole phrase transformations, not by accumulations of individual transformations.

As the analysis of individual phrases continues, these are found to undergo partially the same, partially different transformations. In English, for example, we find many phrases which can undergo both the active—passive voice transformation and a transformation from non-progressive to progressive aspect, such as the phrase

The dog bit the man

which can → The man was bitten by the dog (T_{pass})
and also → The dog was biting the man (T_{prog})
and even both → The man was being bitten by the dog ($T_{pass}+T_{prog}$)

although the apparently identical phrase,

The dog chewed the bone

can undergo T_{pass} only if it also undergoes T_{prog}, namely,
it cannot → *The bone was chewed by the dog[36] (T_{pass})
but it can → The dog was chewing the bone (T_{prog})
and it can also → The bone was being chewed by the dog ($T_{pass}+T_{prog}$).[37]

0.3. Form and Meaning. Two phrases which are transforms of each other are correlated in meaning as well as in form. This is not to say that their meanings are identical (on the contrary, one assumes *a priori* that each difference in form corresponds to a difference in meaning), but rather that there is a constant difference between the meanings of individual units of correlated transform pairs, i.e. that in any series of transformations $F^1 \rightarrow F'^1, F^2 \rightarrow F'^2, \ldots F^n \rightarrow F'^n$, the referential meaning of F is related to (differs from) that of F′ in exactly the same way in each of

[36] Barring some particular environment, this will usually be interpreted as a resultative (where "was chewed" could be substituted by "had been chewed," which could not be done in the case of "The man was bitten by the dog"); this is a case of noncorrelation of meaning as explained in 0.3.

[37] Such differences in the ability to undergo transformations are one of the most productive, if not the most productive, means of distinguishing between synonyms (if indeed such exist). For example, the verbs "like" and "enjoy" are probably considered synonymous by most English speakers. However, transformation analysis reveals a marked difference: whereas the phrase "The critic enjoyed the play" can undergo passive and/or progressive transformations (→ "The play was enjoyed by the critic", → "The critic was enjoying the play", → "The play was being enjoyed by the critic"), the superficially synonymous phrase "The critic liked the play" can undergo only T_{pass}, not T_{prog} (→ "The play was liked by the critic", but neither → *"The critic was liking the play" nor → *"The play was being liked by the critic").

the series of pairs. Should this regular correlation of meaning fail to obtain for some pair $F^x \rightarrow F'^x$ formally belonging to this series, this fact is to be considered a danger signal indicating that the formal possibility of T: $F^x \rightarrow F'^x$ may in reality be a superficial or non-productive feature concealing (or, better, not uncovering) some more essential transformation feature which makes it impossible to consider $F^x \rightarrow F'^x$ a true instance of $F \rightarrow F'$.[38] For example, in the English progressive aspect transformation S^1 V $S^2 \rightarrow S^1$ is Ving S^2, the regular meaning correlation obtaining in all cases of $F \rightarrow F'$ in the examples "John eats the apple" → "John is eating the apple", "My wife cooks supper" → "My wife is cooking supper", etc., suddenly fails to obtain in the instance "John sees the boy" → "John is seeing the boy"; this is our clue to seek other transformation features distinguishing "John sees the boy" from "John eats the apple", "My wife cooks supper", etc.[39] Similarly, we find that in one type of passive—active transformation in Russian, namely S^1_n V_s $S^2_i \rightarrow S^2_n$ V S^1_a, we find that the meaning of F differs from that of F′ in exactly the same way in each of the instances of $F \rightarrow F'$: *komnata napolnjalas' tolpoj* 'the room was filled by the crowd' → *tolpa napolnjala komnatu* 'the crowd filled the room', *zala osveščaetsja fonarikami* 'the room is lighted by lanterns' → *fonariki osveščajut zalu*, *simfonija ispolnjaetsja orkestrom* 'the symphony is played by the orchestra' → *orkestr ispolnjaet simfoniju*, but in the formally identical instance *Ivan vernulsja starikom* 'John came back an old man' → *starik vernul Ivana* 'the old man brought John back' the expected correlation does not obtain, which is a signal that we must look elsewhere for differences between *Ivan vernulsja starikom* and the other S^1_n V_s S^2_i phrases just cited.[40]

[38] One cannot of course have recourse to meaning alone, but a sharp difference in meaning may well be the clue to an equally sharp, if not equally obvious, difference in form. A good many seeming differences in meaning unaccompanied by formal distinctions may be due primarily to our as yet rather naïve conception of linguistic form.

[39] One finds such features, e.g., in the fact that "John eats the apple noisily" can → "John is eating the apple noisily", but "John sees the boy clearly" cannot → *"John is seeing the boy clearly"; such features will probably eventually separate out and formally characterize all verbs of perception.

[40] The principal difference is that *Ivan vernulsja starikom* is a case of simultaneous double predication resulting from the combinatory transformation of two kernel sentences *Ivan vernulsja* 'John came back' and *Ivan starik* 'John is an old man', whereas the other phrases are simple passive transforms (e.g., one cannot derive *zala osveščaetsja fonarikami* from a combination of *zala osveščaetsja* and *zala fonariki*).

0.31. DIRECTIONAL TRANSFORMATIONS. The problem of meaning correlations discussed in 0.3 is closely connected with that of the direction in which transformations proceed. It has been suggested that the rather awkward requirement that transforms be correlated in meaning as well as in form could be eliminated by stating that (1) transformations are unidirectional and (2) instrumental constructions are not basic but are derived from other kernels; this would permit the statement that *starik vernul Ivana* 'the old man brought John back' is a kernel and, because of the perfectivity—animation rule described in 1.112 below, one cannot derive *Ivan vernulsja starikom* (regardless of its meaning) therefrom.[41] Now, while this viewpoint provides a welcome rule eliminating all formal connection between *Ivan vernulsja starikom* 'John came back an old man' and *starik vernul Ivana* 'the old man brought John back', it raises some broader theoretical problems which ought not to pass unnoticed. For one thing, while there is very probably a hierarchy of phrase structures in all languages, and while the relation between certain phrase types may be most economically described as sets of transformations proceeding in a certain direction (this seems to be the case with active—passive constructions in English as well as Russian[42]), it is equally true that given the correlated transforms F and F′ (i.e., given the existence of the phrase types F and F′ and a statable procedure for deriving one from the other), there is no reason to assume *a priori* that the derivation proceeds in one direction rather than the other (the formal description is just as easy in terms of F′ → F as in terms of F → F′). There is, as a matter of fact, no very good reason for assuming that the relation between correlated transforms must be that of unidirectional derivation (i.e., for positing automatic hierarchy between these phrase types). There are compelling historic reasons for asserting that this cannot always be the case.

[41] This argument goes on to say that had the kernel verb been imperfective *(vozvraščal)*, the transformation would have been possible. This is not quite true, however, since the phrase *Ivan vozvraščalsja starikom* is, if not impossible, at least restricted to a few specific contexts, regardless of its meaning ('John came back an old man' or 'John was brought back by the old man'), i.e. regardless of its derivational history (← *Ivan vozvraščalsja* + *Ivan starik* or ← *starik vozvraščal Ivana*). A more accurate statement might be that S^1_n V S^2_a → S^2_n V_a S^1_i is impossible wherever S^2 is animate; with inanimate S^2 and animate S^1, e.g. *buxgalter sostavljaet sčet* 'the bookkeeper is making up the account', the same transformation is possible provided only V is not perfective; cf. 1.112. For other restrictions on this type of construction, see V. V. Vinogradov, *Russkij jazyk*, 633.

[42] For the arguments concerning English, see Noam Chomsky, *Syntactic Structures*, 80.

0.311. DIACHRONIC SYNTAX. If we look briefly at syntax from the diachronic rather than from the synchronic point of view, we see that (1) systems of correlated transforms provide the most convenient framework for discussing the historical evolution of syntactic forms, and (2) a description which considers all transformations to be unidirectional presupposes the demonstrable untruth that syntactic patterns are static. Assuming that a hierarchic distinction between kernel and derivative may but need not obtain between correlated transforms, and once it has been established that F and F′ are correlated transforms, there are three possible transformational relations between them: (1) neither F nor F′ can be shown to be the kernel from which the other is derived, i.e., F and F′ are simply coexisting and interchangeable phrase types, not necessarily identical in meaning (type F $\longleftrightarrow$ F′); (2) one type can be proved derivative from the other, namely either (2a) F is a kernel and F′ a derivative (F $\rightarrow$ F′) or (2b) F′ is a kernel and F derived therefrom (F $\leftarrow$ F′). The indisputable fact that with the passage of time constructions of one type succeed constructions of another type leads us to posit a succession of five stages (which, in actual historical fact, would flow imperceptibly each into the next):

(1) F . . F exists alone (the type F′ has not yet been used)

(2) F ($\rightarrow$ F′) F is the kernel, but can $\rightarrow$ F′ (F is more common, but the type F′ is growing)

(3) F $\longleftrightarrow$ F′ F and F′ are fully interchangeable

(4) (F $\leftarrow$) F′ F′ is the kernel, but can $\rightarrow$ F (F is felt as archaic, but still used occasionally)

(5) F′ F′ exists alone (F is found in older texts only).[43]

[43] As an example of this process, consider the replacement of the "instrumental of cause", e.g. *sdelal' ošibkoju* 'do by mistake', by various analytic constructions of the type pS, e.g. *po ošibke* 'by mistake', *iz-za gluposti* 'because of stupidity', *ot ustalosti* 'from tiredness'. Taking one of the latter, we let F = the phrase type V S and F′ = the phrase type V iz-za S_g, and we can fix the broad outlines of the historical development as follows:

(1)	F	Old Russian, through 16th century
(2)	F ($\rightarrow$ F′)	17th century
(3)	F $\longleftrightarrow$ F′	18th century
(4)	(F $\leftarrow$) F′	19th century
(5)	F′	Modern Russian.

For details of dates and examples, see T. P. Lomtev, *Očerki po istoričeskomu sintaksisu russkogo jazyka*, Moskva, 1956, pp. 247f., 386f.

Conversely, any synchronic slice should try to fix the relation between two correlated transforms as one of the three stages $F \rightarrow F'$, $F \leftrightarrow F'$, or $F \leftarrow F'$; failure to do so is to further the outdated Saussurian equation of synchronic with static. The assumption that all derivational relations are of the type $F \rightarrow F'$ is therefore seen to be incompatible with historical fact and consequently unacceptable even in synchronic analysis.[44]

0.4. PLAN OF ANALYSIS. In what follows, the analytic technique outlined above has been applied to Russian constructions in which instrumental substantives modify finite verbal forms. Considerations of space require a degree of symbolization which is, at times, unfortunately high; often, only one example of the more common types of subclass is given.

With insignificant exceptions, there are after reduction (cf. 0.211) six morphologically distinct types of phrase in which instrumental substantives modify verbs:

1. S^1_n V_s S^2_i: *komnata napolnjalas' tolpoj* 'the room was being filled by the crowd', *luga zalilis' vodoj* 'the meadows were flooded with water', *sčet sostavljaetsja buxgalterom* 'the account is drawn up by the bookkeeper', *učreždenie rukovodilsja rabotnikom* 'the establishment is managed by a worker', *student udarilsja nožom* 'the student wounded himself with a knife', *Ivan vernulsja starikom* 'John came back an old man', *barži tjanulis' rjadami* 'the barges moved along in rows', *Boris vernulsja večerom* 'Boris came back in the evening'.[45]

2. S^1_n V S^2_i: *rabotnik rukovodil učreždeniem* 'the worker manages

[44] The second half of the suggested solution to the problem posed by *Ivan vernulsja starikom* → *starik vernul Ivana* is also ope.. to criticism. There is no good reason to assume that instrumental constructions are *per se* secondary forms, derived from kernels of different structure. This assumption, which may be based on a faulty equation of the Russian instrumental substantive S_i with the English "passive actor" byS (cf. footnote 1), fails to take into account the many instrumental constructions which cannot, to my knowledge, be derived from other phrase types, e.g. *kapitan komanduet batal'onom* 'the captain commands the batallion', *on povel brovjami* 'he raised his eyebrows', *student udaril professora nožom* 'the sutdent struck the professor with the knife'. Eventually it will probably prove to be the case that, within a morphologically defined phrase type, some of the units will be kernels and others secondary transforms derived from other phrase types. The present paper cannot go into this problem of categorical hierarchies in any detail.

[45] All examples given for this and the following morphologically described classes are distinguished from each other by transformation features described in the individual sections to follow.

the establishment', *kapitan komanduet batal'onom* 'the captain commands the batallion', *Ivan pokačal golovoj* 'John nodded his head', *on povel brovjami* 'he raised his eyebrows', *Ivan priexal starikom* 'John arrived an old man', *ona vyla šakalom* 'she howled like a jackal', *oni šli verenicej* 'they went in a row', *Boris čitaet večerom* 'Boris reads in the evening', *oni šli lesom* 'they were walking through the forest', *on govorit šopotom* 'he speaks in a whisper'.

3. S^1_n V A_i S^2_i : *on govoril nizkim tonom* 'he spoke in a low voice', *on kričal gromkim golosom* 'he shouted in a loud voice', *on smotrel ostorožnymi glazami* 'he looked with cautious eyes'.

4. S^1_n V S^2_a S^3_i: *oni vybrali ego prezidentom* 'they elected him president', *ja znal ego studentom* 'I knew him as a student', *ja sčitaju ego durakom* 'I consider him a fool', *on zakryl dver' rukoj* 'he closed the door with his hand', *on udivil nas otvetom* 'he astonished us by his answer', *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt', *tetja nadelila menja nasledstvom* 'my aunt left me an inheritance'.

5. Vø S_i : *zateklo krov'ju* 'blood began to flow', *popaxivaet dymom* 'it smells rather of smoke'.

6. S^1_a Vø S^2_i : *šljapu uneslo vetrom* 'the hat was carried off by the wind', *otca perexalo avtomobilem* 'father was run over by a car', *luga zalilo vodoj* 'the meadows were flooded with water'.

Sections 1—6 below will discuss these six phrase types in some detail and point out many of the transformationally determined varieties within each type.

1. PHRASE TYPE S^1_n V_s S^2_i.

1.1. Units of type S^1_n V_s S^2_i can be classified as containing subjective, semi-subjective, and non-subjective instrumental modifiers. The subjectivity or non-subjectivity of S^2_i is formally expressed in the possibility or impossibility of the transformation T: → S^2_n V S^1_a or (rarely) → S^2_n V S^1_i. Subjective and semi-subjective units appear to be derivative from correlated transforms.

1.11. Subjective instrumental modifiers occur in units where the transformation T: → S^2_n V $S^1_{a/i}$ is possible, e.g. *komnata napolnjalas' tolpoj* 'the room was being filled up by the crowd' → *tolpa napolnjala komnatu, luga zalivalis' vodoj* 'the meadows were flooded with water' → *voda zalivala luga, sčet sostavljaetsja buxgalterom* 'the account is made up by the bookkeeper' →

buxgaller sosłavljael sčel, učreždenie rukovodilsja rabołnikom 'the establishment is managed by a worker' → *rabołnik rukovodił učreždeniem.* These units can be divided into two groups, according to whether or not the verb can occur in the perfective aspect (formally, whether or not T: $V_s \rightarrow V_{sp}$ is possible).

1.111. Units in which S^1 and S^2 are inanimate substantives are not restricted as to aspect, e.g. *komnała napolnjalas' łolpoj* 'the room was being filled up by the crowd' / *komnała napolnilas' łolpoj* '... was filled...', *luga zalivalis' / zalilis' vodoj* 'the meadows were being flooded / were flooded with water', nor are their S^2_n V S^1_a transforms, e.g. *łolpa napolnjala / napolnila komnatu, voda zalivala / zalila luga.*

1.112. Units in which S^1 is an inanimate and S^2 an animate substantive can occur only in the imperfective aspect (i.e., T: $V_s \rightarrow V_{sp}$ is impossible), e.g. *sčet sosłavljaetsja buxgallerom* 'the account is made up by the bookkeeper' cannot → **sčet sosłavilsja buxgallerom*, similarly in the past *sčet sosłavljalsja buxgallerom* cannot → **sčet sosłavilsja buxgallerom.* This restriction of aspect does not apply to the S^2_n V S^1_a transforms of these units, e.g. *buxgaller sosłavljael / sosłavił sčet* 'the bookkeeper makes / will make up the account', *buxgaller sosłavljal / sosłavił sčet.*[46] If we accept the statement, "Of two correlated transforms, the one having the lesser number of transformation restrictions is to be considered basic, and the other a derivative thereof," we will then consider the present (1.112) S^1_n V_s S^2_i units to be derived from their correlated S^2_n V S^1_a transforms.

1.113. In one infrequent type of subjective instrumental unit, the original T: $S^2_i \rightarrow S^2_n$ entails not $S^1_n \rightarrow S^1_a$ but $S^1_n \rightarrow S^1_i$, producing the transform S^2_n V S^1_i, e.g. *učreždenie rukovodilsja rabołnikom* 'the establishment is managed by a worker' → *rabołnik rukovodił učreždeniem.* Cf. 2.1122.

1.114. One type of S^1_n V_s S^2_i unit is characterized by the possibility of a further transformation T: → S^1_a Vø S^2_i, e.g. *luga zalilis' vodoj* 'the meadows were flooded with water' → *luga zalilo vodoj.* Cf. 6.12.

1.12. Semi-subjective instrumental modifiers occur in units

[46] It was Roman Jakobson who first called this fact to the author's attention; cf. also V. V. Vinogradov, *Russkij jazyk*, 533.

where S^1 is an animate and S^2 an inanimate substantive. The subjective transformation T: → S^2_n V S^1_a is usually possible but awkward (i.e., less grammatical than in the case of the subjective units in 1.11 above), e.g. *student udarilsja nožom* 'the student struck himself with the knife' → *nož udaril studenta.* This semi-subjective status of S^2, however, is much less important than the fact that this type of unit can be transformed by T: → S^1_n V S^3_a S^2_i, e.g. → *student udaril professora nožom* 'the student struck the professor with the knife'; this transformation is impossible for both subjective and non-subjective units. The S^1_n V_s S^2_i unit is probably to be considered a derivative of the S^1_n V S^3_a S^2_i transform; cf. 4.

1.13. In units with non-subjective instrumental modifiers the transformation T: → S^2_n V $S^1_{a/i}$ is either impossible or involves such a shift in referential meaning (cf. 0.3 above) that the two units S^1_n V_s S^2_i and S^2_n V S^1_a cannot be considered correlated transforms of each other, e.g. *Ivan vernulsja starikom* 'John came back an old man' → **starik vernul Ivana* 'the old man brought John back', *barži tjanulis' rjadami* 'the barges moved in rows' → **rjady tjanuli barži* 'the rows (e.g. of men) pulled the barges'. These non-subjective units can be divided into two groups, containing predicative and non-predicative instrumental modifiers, according to whether or not the verb can be transformed to a form of the verb 'to be' (formally, whether T: V_s → byl- is possible).

1.131. In units with predicative instrumental modifiers the transformation T: → S^1_n byl- S^2_i is possible, e.g. *Ivan vernulsja starikom* 'John came back an old man' → *Ivan byl starikom* 'John was an old man'. This predicative instrumental unit can be derived from the combination of two simpler units *Ivan vernulsja* 'John came back' and *Ivan byl starikom* 'John was an old man' either directly or through some intermediate step such as *kogda Ivan vernulsja, on byl starikom* 'when John came back, he was an old man'. The non-subjectivity of S^2_i in these units finds further formal expression in the fact that it can usually be omitted (T: S^2 → o), e.g. → *Ivan vernulsja;* cf. **učreždenie rukovodilsja* 'the establishment is managed', etc. Cf. 2.1211.

1.132. In units with non-predicative instrumental modifiers the transformation T: → S^1_n byl- S^2_i is impossible, e.g. *barži tjanulis' rjadami* 'the barges moved in rows' → **barži byli rjadami* 'the barges were rows', but one or more of a number of prepositional transformations T: → S^1_n V_s pS^2 is possible, e.g. → *barži tjanulis'*

v rjadax 'the barges moved in rows'. S^2_i is always either a temporal or a spatial modifier; the individual words occurring as S^2_i can be listed as temporal or spatial according to other formal criteria (e.g. whether or not the word can be used in the accusative to modify verbs in *-sja*, etc.).

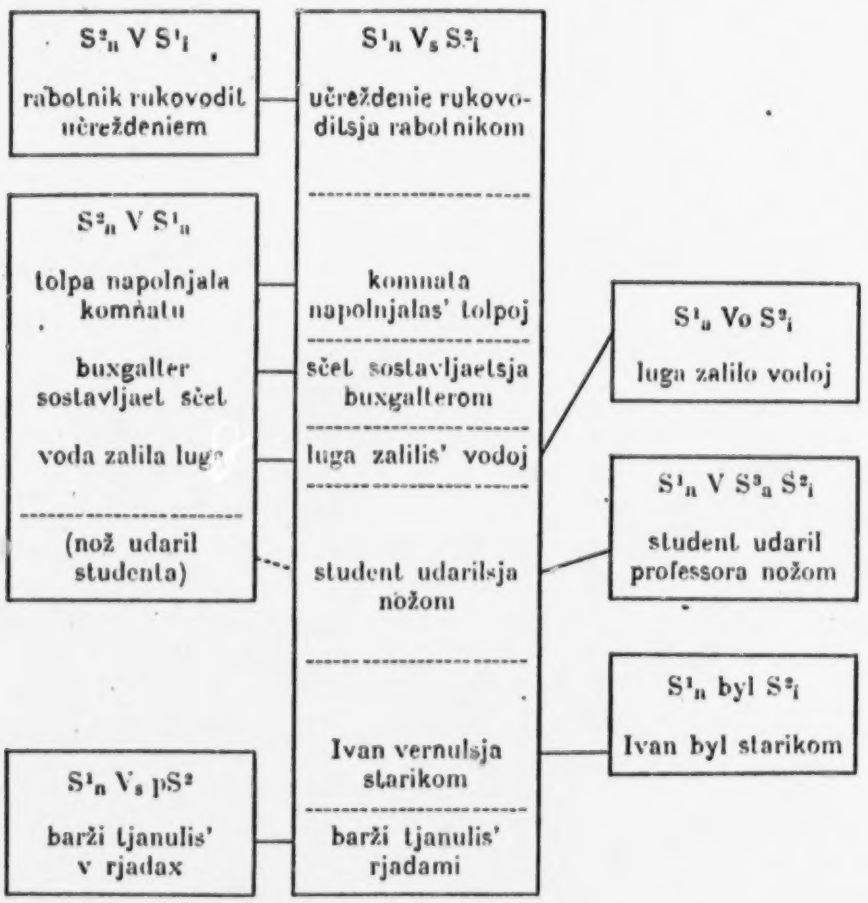
1.2. The possibility or impossibility of a particular units undergoing each of the set of possible transformations can be represented in tabular form as follows:

TABLE 1A : TRANSFORM FEATURES OF S^1_n V_s S^2_i UNITS

T: →	S^1_n V S^1_a	S^1_n V S^1_i	V_{sp}	S^1_n V_{pass} S^1_i	S^1_n V S^2_{sp} S^2_i	S^1_n byl- S^2_i	S^1_n V_{sp} S^2_i	
	+	—	+	—	—	—	—	komnata napolnjalas' tolpoj
	+	—	+	+	—	—	—	luga zalivalis' vodoj
	+	—	—	—	—	—	—	sčet sostavljaetsja buxgalterom
	—	+	—	—	—	—	—	učreždenie rukovoditsja rabotnikom
	(+)	—	+	—	+	—	—	student udarilsja nožom
	(—)	—	+	—	—	+	—	Ivan vernulsja starikom
	(—)	—	—	—	—	—	+	barži tjanulis' rjadami

1.3. The network of correlated transforms in which units of type S^1_n V_s S^2_i participate can be represented schematically as follows:

TABLE 1B: TRANSFORM NETWORK OF S^1_n V S^2_i UNITS



2. PHRASE TYPE S^1_n V S^2_i.

2.1. Units of type S^1_n V S^2_i can be classified as containing central or marginal instrumental modifiers,[47] according to whether the instrumental substantive cannot or can be omitted from the given unit (i.e., whether $\bar{T}$: $S^2_i \rightarrow$ ø is impossible or possible), e.g. on the one hand *on čital večerom* 'he read in the evening' → *on čital*, *ona vyla šakalom* 'she howled like a jackal' → *ona vyla*, but on the other *rabotnik rukovodil učreždeniem* 'the worker manages the establishment' → **rabotnik rukovodil*, *on pokačal golovoj* 'he nod-

[47] In another sense all instrumentals can be considered marginal; see Roman Jakobson, "Beitrag zur allgemeinen Kasuslehre: Gesamtbedeutungen der russischen Kasus", *Travaux du Cercle Linguistique de Prague*, VI (1936), pp. 240-288.

ded his head' → **on pokačal.* Units with central instrumental modifiers fall into two, and units with marginal modifiers into several, sub-groups.

2.11. Units in which T: $S^2_i \rightarrow ø$ is impossible contain central instrumental modifiers, e.g. *rabotnik rukovodil učreždeniem* 'the worker manages the establishment', *kapitan upravljaet batal'onom*, 'the captain commands the batallion', *on pokačal golovoj* 'he nodded his head', *on podergival nosom* 'his nose twitched'. There are two obvious sub-groups, the principal formal distinction between which lies in the high vs. low number of restrictions upon the adjective modifiers which can be added to S^2_i (i.e., whether for certain types of A the transformation T: $ø \rightarrow A_i$ is possible or not).

2.111. Units in which S^2_i can rarely be modified by an adjective, and never by a possessive pronominal adjective referring to other than S^1_n, contain as S^1_n animate substantives usually referring to persons, as V verbs expressing a motion of some kind, and as S^2_i inanimate substantives referring either to a part of the body of S^1_n or to an object which can be held in the hand of S^1_n, e.g. *on pokačal golovoj* 'he nodded his head', *ona ševelila gubami* 'she moved her lips', *on brosal kamnjami* 'he was throwing stones', *oni maxali platkami* 'they waved their kerchiefs'. There are two minor sub-groups.

2.1111. Units in which the instrumental substantive can be replaced by the same substantive in the accusative (T: $S^2_i \rightarrow S^2_a$) contain such units as e.g. *on pokačal golovoj* 'he nodded his head' → *on pokačal golovu*, *ona brosala kamnjami* 'she threw stones' → *ona brosala kamni*, *on razvel rukami* 'he spread his hands' → *on razvel ruki.* The S^1_n V S^2_a transforms are not limited in T: $ø \rightarrow A_i$ transformations, e.g. *on razvel ruki* 'he spread (his) hands' → *on razvel ix ruki* 'he spread their hands' (cf. *on razvel rukami* → **on razvel ix rukami*).

2.112. Units in which T: $S^2_i \rightarrow S^2_a$ is impossible do not differ noticeably in meaning from 2.1111 units, e.g. *on podergival nosom* 'his nose twitched', *on povel brovjami* 'he raised his brows'.

2.1121. Units in which S^2_i can with very few restrictions be modified by adjectives (i.e., where T: $ø \rightarrow A_i$ is possible for many types of A) usually contain as S^1_n an animate substantive referring to a person, as V a verb with the general meaning of directing, exercising influence over, and as S^2_i an inanimate substantive most

frequently referring to a collectivity, e.g. *rabotnik rukovodit učreždeniem* 'the worker manages the etablishment', *kapitan upravljaet batal'onom* 'the captain commands the batallion'. There are two sub-groups.

2.1121. In most cases no active → passive transformation T: → S^2_n V_s S^1_i is possible (since there is no V_s form of V), e.g. *kapitan komanduet batal'onom* 'the captain commands the batallion' → **batal'on komanduetsja kapitanom.*

2.1122. In a few cases T: → S^2_n V S^1_i is possible, e.g. *rabotnik rukovodit učreždeniem* 'the worker manages the establishment' → *učreždenie rukovoditjsa rabotnikom.* Cf. 1.113.

2.12. Units in which T: S^2_i → ø is possible contain marginal instrumental modifiers (this label actually being only a restatement of the possibility of T: S^2_i → ø), e.g. *Ivan priexal starikom* 'John arrived an old man', *ona vyla šakalom* 'she howled like a jackal', *oni šli verenicej* 'they went in a row', *oni šli lesom* 'they walked through the forest', *Boris čital večerom* 'Boris read in the evening', *on govoril šopotom* 'he spoke in a whisper'. There are two principal and several smaller groups of unit with marginal modifiers.

2.121. Units in which the transformation T: → S^2_n V is possible, e.g. *Ivan priexal starikom* 'John arrived an old man' → *starik priexal, ona vyla šakalom* 'she howled like a jackal' → *šakal vyl, oni šli verenicej* 'they went in a row' → *verenica šla* can be termed analogous units (in the sense that each contains an analogy), which express a temporary identity or similitude between S^1 and S^2. Analogous units are subdivided into predicative and non-predicative units, and the latter further divided into comparative and metamorphic.

2.1211. Units in which the transformation T: → S^1_n byl- S^1_i is possible contain predicative instrumental modifiers, e.g. *Ivan priexal starikom* 'John arrived an old man' → *Ivan byl starikom* 'John was an old man'. The label 'predicative' is itself obtained from a form of this transform, e.g. T: → kogda S^1_n V, P_{sln} byl- $S^2_{i\,n}$ (where P_{sln} = a pronominal substantive referring to S^1_n), e.g. *kogda Ivan priexal, on byl starikom* 'when John came, he was an old man'. Predicative units can always be derived from a combination of two simpler units with common S^1_n, e.g. (*Ivan priezžael* 'John comes' + *Ivan starik* 'John is an old man') T_{past} =

(*Ivan priexal*+*Ivan byl starik*[*om*]) = *Ivan priexal starikom*, cf. the similar derivations *Ivan zdes'* 'John is here'+*Ivan sud'ja* 'John is a judge' = *Ivan zdes' sud'ej* 'John is here as a judge' and perhaps even *Ivan durak* 'John is a fool'+*Ivan durak* = *Ivan durak durakom* 'John's an awful fool', although such mechanisms should not be insisted on too much. It is this combination of prediction within predication that permits the addition of such degree modifiers as *sovsem* 'completely' to S^2_i, e.g. *Ivan priexal sovsem starikom* 'John arrived a real old man', whereas such modification is impossible in e.g. *Boris čital večerom* 'Boris read in the evening' → **Boris čital sovsem večerom*. There may be a connection between the possibility vs. impossibility of such degree modification and the derivational network of S^2_i: if, e.g., there exists for the given S^2_i the transformation T: S → A (*starik* 'old man' → *staryj* 'old') and for the resulting A the transformation T: $A_{pos} \rightarrow A_{comp}$ (*staryj* 'old' → *starše* 'older'), then one can add *sovsem* to the S^1_n V S^2_i unit (it is interesting to note that such degree modification is only possible at the extremes 'completely' and 'not at all'; although we have all degrees — *on sovsem star* 'he's quite old', *on dovol'no star* 'he's rather old', *on nemnožko star* 'he's a bit on the old side', *on otnjud' ne star* 'he's not in the least old' — we can derive only *on priexal sovsem starikom* 'he was quite an old man when he arrived' and *on priexal otnjud' ne starikom* 'he wasn't at all old when he arrived', but not **on priexal dovol'no starikom* 'he was rather an old man when he arrived' or **on priexal nemnožko starikom* 'he was a bit of an old man when he arrived'); such modification is impossible or unlikely in units for which no T: $S^2 \rightarrow A$ is possible (e.g. when S^2_i = *verenicej* 'in a row', *šopotom* 'in a whisper') or, if such T is possible, where no degree transformation T: $A_{pos} \rightarrow A_{comp}$ is possible (e.g. *večer* 'evening' (noun) → *večernij* 'evening' (adj.), but no *večernij* → **večernee*). Note that in the very similar S^1_n V S^2_a S^3_i units a case of constructional homonymity[48] obtains whenever the unit can be derived from two different sets of simpler units; e.g., the unit *Ivan znal Borisa studentom* 'John knew Boris as a student' can be derived from both *Ivan znael Borisa* 'John knows Boris'+*Ivan student* 'John is a student' and *Ivan znael Borisa* 'John knows Boris'+*Boris student* 'Boris is a student', and consequently only the context can tell us whether *studentom* refers to *Ivan* or to *Borisa*.

In a broader sense of the term, many other S^1_n V S^2_i units

[48] Cf. Chomsky, *Syntactic Structures*, 85f.

could be called predicative, since they too can be derived from pairs of simpler units, e.g. *oni šli lesom* 'they were walking through the forest' = *oni šli* 'they walked'+*oni v lesu* 'they are in the forest', *Boris čital večerom* 'Boris was reading in the evening' = *Boris čital* 'Boris was reading'+*bylo večerom* 'it was in the evening'; in none of these other cases, however, can the S^1_n V S^2_i unit be derived from two simpler units with identical S^1_n, which is the case with *Ivan priexal starikom* 'John arrived an old man' = *Ivan priexal* 'John arrived'+*Ivan byl starikom* 'John was an old man'. Cf. 1.131.

2.1212. Units in which T: → S^1_n byl- S^2_i is impossible, e.g. *ona vyla šakalom* 'she howled like a jackal' → **ona byla šakalom* 'she was a jackal', *oni šli verenicej* 'they went in a row' → **oni byli verenicej* 'they were a row', contain non-predicative modifiers, either comparative or metamorphic.

2.12121. Non-predicative units in which the transformation T: → S^1_n V kak S^2_n is possible contain comparative instrumental modifiers, which describe V rather than S^1_n, e.g. *ona vyla šakalom* 'she howled like a jackal' → *ona vyla kak šakal* (*kak* 'like, as'); note that T:→ S^1_n byl- kak S^2_n is not the same, e.g. *ona vyla kak šakal* = (i.e., can be transformed to) *ona vyla, kak vyl by šakal* 'she howled as a jackal would howl', not *ona byla kak šakal kogda ona vyla* 'she was like a jackal when she howled'.

2.12122. In certain non-predicative units there obtains, in addition to the comparative T: → S^1_n V kak S^2_n just mentioned, an additional, prepositional transformation T: → S^1_n V pS^2, e.g. *oni šli verenicej* 'they went in a row' → *oni šli v verenice* (*v* 'in'). Such units can be called metamorphic, since S^1_n, in performing the action V, takes on temporarily the form of S^2; in other words, in metamorphic units S^2_i characterizes neither S^1 alone (as in 2.1211) nor V alone (as in 2.12121), but S^1_n as engaged in V.

2.122. Units in which the transformation T: → S^2_n V is impossible are non-analogous, e.g. *oni šli lesom* 'they were walking in the forest' → **les šel* 'the forest walked', *Boris čital večerom* 'Boris read in the evening' → **večer čital* 'the evening read', *on govoril šopotom* 'he spoke in a whisper' → **šopot govoril* 'a whisper spoke'. They are divided into two groups, temporal-spatial and semi-tautological.

2.1221. Units in which some prepositional transformation T: → S^1_n V pS^2 is possible contain either temporal or spatial instru-

mental modifiers, e.g. *oni šli lesom* → *oni šli v lesu* 'in the forest', *po lesu* 'through the forest', etc., *Boris čitaet večerom* 'Boris reads in the evening' → *Boris čitaet pod večer* 'towards evening', *po večeram* 'in the evenings', *v ètot večer* 'this evening', etc. The further division into units containing temporal vs. spatial modifiers is made on the basis of formal features of S^2_i not directly connected with this paper, e.g. possibility or impossibility of modifying verbs in *-sja* by accusative substantives.

2.1222. Units in which no T: → S^1_n V pS^2 is possible, but for which on the other hand an interclass transformation T: → S^1_n V_{s2} (where V_{s2} is a verb derived from S^2) is possible, can be called semi-tautological, since the derived V_{s2} is a form of the action expressed by V, e.g. *on govoril šopotom* 'he spoke in a whisper' cannot* → *on govoril v šopote*, but can → *on šeptal* 'he whispered', and *šeptat'* is a manner of *govorit'*. There are very few such units, all of which correspond to the more frequent constructions with obligatory adjective modifier of S^2_i, e.g. *on govoril tixim golosom* 'he spoke in a quiet voice' (cf. 3.1f.).

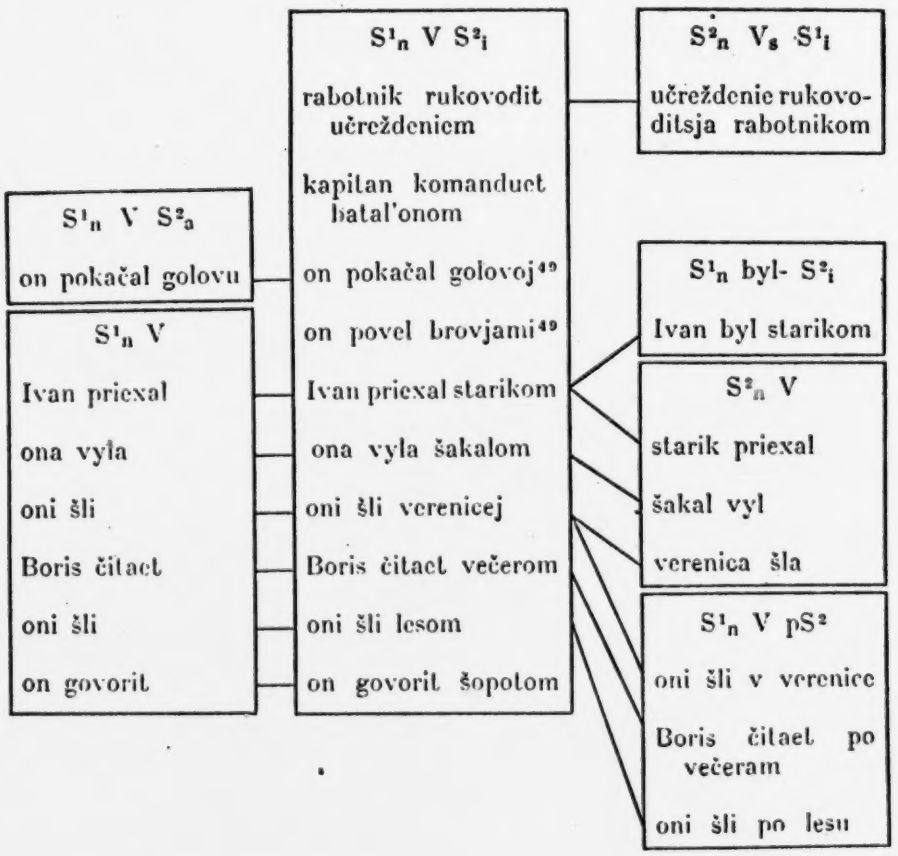
2.2. The transform features of S^1_n V S^2_i units discussed above can be summarized in tabular form as follows:

TABLE 2A: TRANSFORM NETWORK OF S^1_n V S^2_i UNITS

T: → S^2_i	o → A_i	S^2_n V_s S^1_i	S^2_n V	S^2_i → S^2_a	S^1_n byl- S^2_n	S^1_n V kak S^2_n	S^1_n V pS^2	S^1_n V S_2	(V_s S^2_a)	
—	+	+	—	—	—	—	—	—	—	rabotnik rukovodit učreždeniem
(—)	+	—	—	—	—	—	—	—	—	kapitan komanduet batal'onom
—	(—)	—	—	+	—	—	—	—	—	on pokačal golovoj
—	(—)	—	—	—	—	—	—	—	—	on povel brovjami
+	+	—	+	—	+	—	—	(+)	—	Ivan priexal starikom
+	+	—	+	—	—	+	—	—	—	ona vyla šakalom
+	+	—	+	—	—	—	+	—	—	oni šli verenicej
+	+	—	—	—	—	—	+	—	+	Boris čitaet večerom
+	+	—	—	—	—	—	+	—	(—)	oni šli lesom
+	+	—	—	—	—	—	—	+	—	on govorit šopotom

2.3. The network of correlated transforms in which units of type S^1_n V S^2_i participate can be represented schematically as follows:

TABLE 2B: TRANSFORM NETWORK OF S^1_n V S^2_i UNITS



3. PHRASE TYPE S^1_n V A_i S^2_i.

3.1. Units[50] of morphologic type S^1_n V A_i S^2_i (rarely, S^1_n V_s A_i S^2_i) are divided into two types, according to whether or not the adjective modifier of S^2_i can be omitted (formally, whether or not T: $A_i \rightarrow \emptyset$ is possible). Where A_i can be omitted (e.g,. *kapitan komandoval pervym batal'onom* 'the captain commanded the first batallion' → *kapitan komandoval batal'onom*, *student udarilsja ostrym nožom* 'the student struck himself with a sharp knife' → *student udarilsja nožom*), such omission produces units of

[49] Units characterized by many restrictions on T: $\emptyset \rightarrow A_i$; these restrictions cannot conveniently be represented schematically.

[50] Some of the transformations discussed in this section were first worked out in conversation with Professor Morris Halle of M.I.T. in 1955-56.

types S^1_n V S^2_i or S^1_n V_s S^2_i, of which the original unit with A_j must be considered an expansion. Units in which T: A → ø is impossible, however, form an entirely separate group, being in themselves minimal units, of which A_i is an integral part (e.g., *ona pogljadela svetlymi glazami* 'she looked with her clear eyes' → **ona pogljadela glazami*, *on govoril spokojnym tonom* 'he spoke in a calm tone' → **on govoril tonom*). In all such units there is an obviously close semantic connection between V and S^2_i. Unless the meaning of the term 'metonymy' is stretched beyond its usual limits, there is no established term to describe such a connection; however, the semantic relationship between V and S^2_i is so close that this type of unit can be called 'semi-tautological'. The instrumental substantive adds no new information of its own, but instead serves simply as a sort of syntactic middleman, enabling the information content of A_i to be introduced into the unit.[51]

3.11. All units where T: A_i → ø is impossible are predicative units. The difference between these units and those of type *Ivan priexal starikom* 'John arrived an old man' (cf. 2.1211) is that whereas the latter derive from two predications with common subject (e.g., *Ivan priexal starikom* = *Ivan priexal* 'John arrived'+ *Ivan byl starikom* 'John was an old man'), the former derive from two predications with separate subjects (e.g., *on govoril spokojnym tonom* 'he spoke in a calm tone' = *on govoril* 'he spoke'+*(ego) ton byl spokojnym* 'his tone was calm'); there is always a synecdochic relation between these two subjects and hence also between S^1 and S^2 of the derived unit (e.g., *on govoril serditym golosom* 'he spoke in an angry voice', *Tat'jana dikimi glazami oziraetsja* 'Tat'jana gazes about with wild eyes', *ona gljadela bol'šimi glazami* 'she was looking with her big eyes'). This derivation of the S^1_n V A_i S^2_i unit from two simpler units is formally demonstrable by the transformation T: → kogda S^1_n V, A_p S^2_n byl- $A_{i'n}$ (where A_p is a possessive pronominal adjective *moj* 'my', *tvoj* 'thy', *naš* 'our', *vaš* 'your', or substantive *ego* 'his', *ee* 'hers', *ix* 'theirs' and *byl-* is any tense form of *byt'*); e.g. *kapitan smotrel ostorožnymi glazami* 'the captain looked with cautious eyes' → *kogda kapitan smotrel, ego glaza byli ostorožnymi* 'when the captain looked, his

[51] These units are closely related to units of phrase type S^1_n V S^2_i S^3_g, e.g. *on govoril tonom nastavnika* 'he spoke in the tone of a tutor'; the essential is that S^2_i be modified, and just how it is modified is a secondary matter. This is one of the cases where transformation classification cuts across the lines of, and even contradicts, morphological phrase-type classification.

eyes were cautious'. Various nonproductive sub-types of this transformation are possible, according to whether $A_{i/n}$ is in the short or long form (*svelly/svellye*), nominative or instrumental (*svellye/svellymi*).[52]

3.12. That the instrumental adjective modifies the substantive S^2_i is obvious. It is less obvious, however, that this same instrumental adjective either does or can modify (by implication, due to the transform correlations into which the given unit enters), in addition, the verb V, the subject S^1_n, or both. In fact, all distinctions within the group of S^1_n V A_i S^2_i units are made on this basis, namely which of the other two items V or S^1_n the information content of A_i can and cannot be applied to. We will discuss the relation of A_i first to V, then to S^1_n.

3.121. Units of type S^1_n V A_i S^2_i can be divided into two groups, according to whether or not the information content of A_i can be applied to the verb V (formally, whether or not the transformation T: $\rightarrow S^1_n$ Aø V is possible, where Aø is the zero or adverbial form of A_i).

3.1211. Units in which the adverbial transformation T: $\rightarrow S^1_n$ Aø V is possible can be said to contain semi-adverbial instrumental modifiers. This is the case with the majority of S^1_n V A_i S^2_i units, e.g. *on kričal gromkim golosom* 'he shouted in a loud voice' $\rightarrow$ *on gromko kričal* 'he shouted loudly', *kapitan smotrel ostorožnymi glazami* 'the captain looked with cautious eyes' $\rightarrow$ *kapitan ostorožno smotrel* 'the captain looked cautiously', *on ušel bystrymi šagami* 'he went off with rapid steps' $\rightarrow$ *on bystro ušel* 'he went off rapidly'. Adjectives occurring in units for which this adverbial transformation is possible can be called (if a general term is needed) 'qualifiers', since they are specifically opposed to the 'visible quantifiers' discussed just below.

3.1212. Units in which the adverbial transformation T: $\rightarrow S^1_n$ Aø V is impossible are fewer than the units just discussed; they can be said to contain non-adverbial instrumental modifiers. In all such combinations the adjective A_i is what can be somewhat cumbersomely called a 'visible bi-polar quantifier', by which is meant that such an adjective measures its modified substantive as being at one or the other end of some visible scale, such as big—little, wide—narrow, long—short, high—low. Examples of such

[52] Cf. Morton Benson, "Predicate Adjective Usage in Modern Russion," to appear in *Word*, vol. 15 (1959), no. 1.

units are: *ona gljadela bol'šimi glazami* 'she looked with big eyes' → **ona veliko gljadela* 'she looked greatly', *on vzgljanul uzkimi glazami* 'he glanced up with narrow eyes' → **on uzko vzgljanul* 'he glanced up narrowly', *on ušel dlinnymi šagami* 'he went off with long steps' → **on dlinno ušel* 'he went off lengthily': such transformations are impossible even when an originally visible quantifier is used figuratively, for example 'high', 'low' referring to voice tone, e.g. *on govoril nizkim tonom* 'he spoke in a low tone' → **on nizko govoril* 'he spoke lowly', *ona otvečala vysokim golosom* 'she answered in a high voice'→ **ona vysoko otvečala* 'she answered highly'.

3.122. A second division of S^1_n V A_i S^2_i units is made according to whether or not the information content of A_i can be applied to the subject S^1_n (formally, whether or not T:→ S^1_n byl-A is possible).

3.1221. Units in which the transformation T: → S^1_n byl A is possible can be said to contain pseudo-predicative instrumental modifiers, in the sense that A_i rather implies the statement S^1_n A (e.g., *kapitan smotrel ostorožnymi glazami* 'the captain looked with cautious eyes' implies *kapitan byl ostorožen* 'the captain was cautious'), but does not make this statement outright; in fact, the implication can always be explicitly denied (e.g., *on govoril veselym tonom, xotja on sam vovse ne byl vesel* 'he spoke in a gay tone, although he wasn't in the least gay himself'). Examples of such units: *on govoril serditym golosom* 'he spoke in an angry voice' → *on byl serdit* 'he was angry', *on doložil uverennym golosom* 'he announced in a confident voice' → *on byl uveren*, 'he was confident', *on skazal veselym tonom* 'he said in a gay tone' → *on byl vesel* 'he was gay', *on govoril spokojnym tonom* 'he spoke in a calm tone' → *on byl spokoen* 'he was calm'. This transformation is impossible for all units for which the adverbial transformation (cf. 3.1212) is impossible.

3.1222. Units in which the transformation T: → S^1_n byl-A is impossible imply nothing about the subject S^1_n and contain purely adjectival instrumental modifiers which describe only the semi-tautological instrumental substantive S^2_i, e.g. *ona pogljadela svetlymi glazami* 'she looked with her clear eyes' → **ona byla svetla* 'she was clear', *Gavrila tupymi glazami pogljadyval* 'Gavrila looked with dull eyes' → **Gavrila byl tup* 'Gavrila was dull', *on govoril nizkim tonom* 'he spoke in a low tone'* → *on byl nizok* 'he was low'. This group includes all units for which the adverbial transformation T: → S^1_n Ao V is impossible, e.g. *on ušel dlinnymi*

šagami 'he went off with long steps' → **on dlinno ušel* 'he went off lengthily' and → **on byl dlinen* 'he was long', *on vzgljanul uzkimi glazami* 'he looked up with narrow eyes' → **on uzko vzgljanul* 'he looked up narrowly' and → **on byl uzok* 'he was narrow'.

3.13. Another type of transformation, which can be called that of synecdochic inversion, is possible in certain cases (formally, T: → $A_n S^2_n V$ and variants thereof), e.g. *on doložil uverennym golosom* 'he announced in a confident voice' → *uverennyj golos doložil* 'a confident voice announced', *ona gljadit svetlymi glazami* 'she looks with her clear eyes' → *svetlye glaza gljadjat* 'the clear eyes look'. The possibility or impossibility of synecdochic inversions depends primarily on the particular lexical units involved, e.g. *on ušel bystrymi šagami* 'he went off with quick steps' can probably not → **bystrye šagi ušli* 'the quick steps went off', but the very similar *on udaljalsja bystrymi šagami* 'he moved off with quick steps' probably can → *bystrye šagi udaljalis'* 'the quick steps moved off'. Since synecdoche always remains a device, a deliberate aberration from normal speech, the acceptability of which is largely a matter of individual taste, it would probably be futile to seek structural rules underlying its use.

3.2. The transform features of S^1_n V A_i S^2_i units can be summarized in tabular form as follows (synecdochic transformations are omitted):

TABLE 3A: TRANSFORM FEATURES OF S_n V A_i S^2_i UNITS

T: → S^2_n byl- A	S^1_n Aø V	S^1_n byl- A	
+	+	+	kapitan smotrel ostorožnymi glazami, on skazal serditym golosom, etc.
+	+	—	on kričal gromkim golosom, ona gljadela svetlymi glazami, etc.
+	—	—	on govoril nizkim tonom, ona smotrela bol'šimi glazami, etc.

3.3. The network of correlated transforms into which units of type S^1_n V A_i S^2_i enter can be represented schematically as follows:

TABLE 3B: TRANSFORM NETWORK OF S^1_n V A_l S^2_i UNITS

4. PHRASE TYPE S^1_n V S^2_a S^3_i.

4.1. Units of type S^1_n V S^2_a S^3_i are divided into two groups, according to whether or not the accusative direct object can be omitted (formally, whether or not T: $S^2_a \rightarrow$ ø is possible). Where S^2_a can be omitted (e.g., *on govoril èto šopotom* 'he said that in a whisper' → *on govoril šopotom* 'he spoke in a whisper', *Ivan čital knigu večerom* 'John was reading a book in the evening → *Ivan čital večerom* 'John was reading in the evening'), such omission produces units of type S^1_n V S^2_i, of which the original S^1_n V S^2_a S^3_i must be considered an expansion. Units in which such omission of S^2_a is impossible, however, are themselves minimal units (at least from the point of view of the present analysis, which deals only with instrumental modifiers; a full transform syntax would consider many S^1_n V S^2_a S^3_i units to be instrumental expansions of original S^1_n V S^2_n units; cf. 4.1233 below).

S^1_n V S^2_a S^3_i units for which T: $S^2_a \rightarrow$ ø is impossible (e.g. *ja sčitaju ego durakom* 'I consider him a fool' → **ja sčitaju durakom* 'I consider a fool', *on zakryl dver' rukoj* 'he closed the door with his hand' → **on zakryl rukoj* 'he closed with his hand') are divided into predicative and non-predicative units, according to whether

or not the unit posits an identity between S^2_a and S^3_i (formally, whether or not a transformation T: → $S^2_n \neq S^3_n$ is possible.

4.11. Predicative units are those in which T: → $S^2_n \neq S^3_n$ is possible, e.g. *oni vybrali ego prezidentom* 'they elected him president' → *on ≠ prezident* 'he is president', *Petrovy nazvali syna Ivanom* 'The Petrovs named their son John' → *Ivan ≠ syn* 'John is the son', *ja sčitaju ego durakom* 'I consider him a fool' → *on ≠ durak* 'he is a fool', *ja znal ego studentom* 'I knew him as a student' → *on ≠ student* 'he is a student'. There are a number of sub-types of predicative unit, all of which are highly restricted lexically.

4.111. Units of inceptive status contain verbs which themselves create the identity of S^2_a and S^3_i, e.g. *oni delali ego sekretarem* 'they made him secretary'; this inceptivity can be demonstrated by transformations containing a form of *stat'* 'become', e.g. *oni vybrali ego prezidentom* 'they elected him president' → *on stal prezidentom* 'he became president', etc. Personal names are a special case within this group, e.g. *Petrovy nazvali syna Ivanom* 'the Petrovs named their son John' → *syn stal (nazyvat'sja) Ivanom* 'the son began to be called John'.

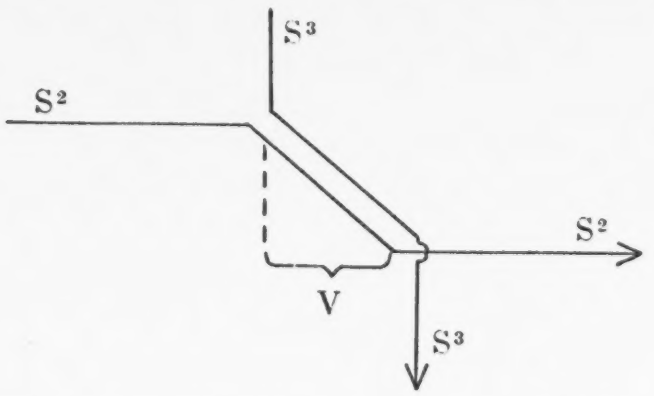
4.112. Pseudo-predicative units express a certain attitude on the part of S^1_n toward the predicative identity of S^2 and S^3, but this identity is not posited as truth, e.g. *ja sčitaju ego durakom* 'I consider him a fool', *druz'ja veličali (ego) statejku (učenym) trudom* 'his friends honored his little article with the name of scholarly opus'.

4.113. In temporal units the instrumental substantive S^3_i is predicated as identical to S^2_a during the time span in which the action V occurs, but only during this time, e.g. *ja znal ego studentom* 'I knew him as a student' (derived from *ja znal ego* 'I knew him' +*on byl studentom* 'he was a student', cf. 2.1211), *Ivan vstretil Petra (ešče) lejtenantom* 'John had already met Peter as a lieutenant', *my uvideli ego (snova) docentom* 'we saw him again as a young professor'.

4.12. Non-predicative units of type S^1_n V S^2_a S^3_i, for which no T: → $S^2_n \neq S^3_n$ is possible, are the largest single group of units containing instrumental substantive modifiers, and contain what are generally if somewhat loosely referred to as "instrumentals of means," e.g. *on zakryl dver' rukoj* 'he closed the door with his hand', *ona nabila podušku puxom* 'she stuffed the pillow with down'.

Within this group there are two rather clearly opposed sub-groups, distinguished by the quite different relations between S^2 and S^3 expressed in the one and the other sub-group. These two sub-groups will be said to contain 'true instrumentals' on the one hand and instrumentals of 'resultant contiguity' on the other. These two subgroups will be described briefly in 4.121 and 4.122; the transformation features which distinguish the one from the other will be taken up in 4.123.

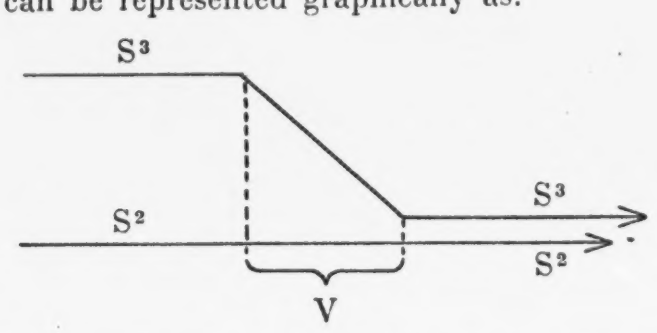
4.121. In units containing true instrumental modifiers, S^3_i is really the means or instrument by which S^1_n accomplishes the action V, e.g. *on zakryl dver' rukoj* 'he closed the door with his hand', *roditeli portjat detej balovstvom* 'parents spoil children by over-indulgence', *Ivan vyčerknul slovo karandašom* 'John crossed out the word with his pencil', *publika vstretila ego aplodismentami* 'the audience greeted him with applause'. In all such cases the relation between S^3 and S^2 is temporally limited to the duration of the action V; once the time span of V has passed, there is no further connection between S^3 and S^2. This temporally limited relation between S^3 and S^2 can be represented graphically as:



In other words, S^3 is intimately associated with S^2 during the time occupied by V, but this association ceases with the cessation of V. Other examples of true instrumental modifiers include *tetja vyzyvala smjatenie (ložnymi) spletnjami* 'my aunt caused confusion with her false gossiping', *on pričinjaet besporjadok (svoimi) šalostjami* 'he causes disorder with his pranks', *Ivan pugal menja blefom* 'John scared me with his bluff', *kučer vzbodril kljaču (gromkim) ponukan'em* 'the coachman encouraged his nag with loud urgings-on', *on toptal pol sapogami* 'he got the floor dirty with his boots', *on obter lico platkom* 'he wiped his face with a

cloth', *soldat prikolol ranenogo štykom* 'the soldier finished off the wounded man with his bayonet', *on udivil menja otvetom* 'he astonished me with his answer'.

4.122. In units containing instrumentals of resultant contiguity, the action V itself establishes a relation of spatial contiguity between S^2 and S^3, and this contiguity continues indefinitely after the action of V has ceased, e.g. *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt', *monax napolnil kuvšin vodoj* 'the monk filled his jug with water', *Ivan zakryl lico vorotnikom* 'John covered his face with his collar', *oni posypali rel'sy peskom* 'they sanded the rails'. The establishment of this spatial contiguity can be represented graphically as:



4.123. This difference in the relations between S^2 and S^3 expressed in units containing true instrumental modifiers and those containing modifiers of resultant contiguity finds formal expression in a number of transform features, some of which are obvious and almost absolute, others of which are only more or less clear tendencies.

4.1231. The most obvious and consistent formal feature of units containing instrumentals of resultant contiguity is the possibility of forming prepositional transforms T: → $pS^2\ S^3$, e.g. *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt' → *na ulice asfal't* 'asphalt is on the street', *ona nabila podušku puxom* 'she stuffed the pillow with down' → *v poduške pux* 'there is down in the pillow', *on zakryl lico vorotnikom* 'he covered his face with his collar' → *pered licom vorotnik* 'the collar is before his face'. Such transformations are usually impossible for units containing true instrumental modifiers, e.g. *on zakryl dver' rukoj* 'he closed the door with his hand' → **na dveri ruka* 'his hand is on the door', *roditeli portjat detej balovstvom* 'parents spoil children by over-indulgence' → **u detej balovstvo* 'children have over-indulgence', *on vyčerknul slovo karandašom* 'he crossed

out the word with his pencil' → **na slove karandaš* 'on the word is a pencil', etc.

4.1232. The temporal limitation of the relation between S^3 and S^2 (to the time span during which the action V occurs) brings S^3 closer to the role of a subject in true instrumental units than in units with resultant-contiguity modifiers. This greater subjectivity is formally expressed in the relative ease with which such subjective transformations as T: → $S^3_n\ S^1\ V\ S^2_a$ are effected, e.g. *roditeli portjat detej balovstvom* 'parents spoil children by over-indulgence' → *balovstvo roditelej portit detej* 'the parents' over-indulgence spoils the children', *publika vstretila ego aplodismentami* 'the audience greeted him with applause' → *aplodismenty publiki vstretili ego* 'the applause of the audience greeted him', *on zakryl dver' rukoj* 'he closed the door with his hand' → *ego ruka zakryla dver'* 'his hand closed the door' (with special WO rules for original pronominal S^1_n). Such transformations are usually much more awkward, if possible at all, for combinations with instrumentals of resultant contiguity, e.g. *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt' → (*)*asfal't rabočix pokryl ulicu* 'the workers' asphalt covered the street', *ona nabila podušku puxom* 'she stuffed the pillow with down' → (*)*ee pux nabil podušku* 'her down stuffed the pillow', *on zakryl lico vorotnikom* 'he covered his face with his collar' → (*)*ego vorotnik zakryl lico* 'the collar covered his face'. This feature, of course, is not one of absolute possibility vs. impossibility of a certain transformation, but rather a relative feature of greater or less ease of transformation (which may equal a higher or lower degree of grammaticalness).

4.1233. The lack of any temporal limitation on the relation established between S^3 and S^2 in units with instrumentals of resultant contiguity (in other words, the permanency and hence the importance of this newly established relation) makes S^3 itself more essential to the $S^1_n\ V\ S^2_a\ S^3_i$ unit than in the case of units with true instrumental modifiers. This relatively greater importance of S^3 in the former case is expressed in the difficulty with which S^3_i can be omitted from such units (formally, the quasi-impossibility of T: $S^3_i \rightarrow \emptyset$), e.g. *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt' → (*)*rabočie pokryli ulicu* 'the workers covered the street', *oni posypali rel'sy peskom* 'they sanded the rails' → (*)*oni posypali rel'sy* 'they scattered the

rails', *on napolnil sunduk bel'em* 'he filled the trunk with laundry' → (*)*on napolnil sunduk* 'he filled the trunk'. Such omission of S^3_i is on the other hand almost always possible for units containing true instrumental modifiers, e.g. *on zakryl dver' rukoj* 'he closed the door with his hand' → *on zakryl dver'* 'he closed the door', *roditeli portjat detej balovstvom* 'parents spoil children with over-indulgence' → *roditeli portjat detej* 'parents spoil children', *on udaril menja palkoj* 'he struck me with a stick' → *on udaril menja* 'he struck me'. As was the case in 4.1232, this is a relative, not an absolute feature.

4.124. A particular sub-group of resultant-contiguity units obtains with a lexically restricted number of verbs expressing the physical transfer of S^3_i to a person (more rarely a creation by a person) S^2_a, e.g. *on nadelil menja podarkami* 'he showered me with gifts', *avtor snabdil knigu primečanijami* 'the author provided the book with notes', *žjuri nagradil ego premiej* 'the jury awarded him the prize', (expressing lack of such transfer) *tetja obdelila menja nasledstvom* 'my aunt deprived me of my inheritance'.

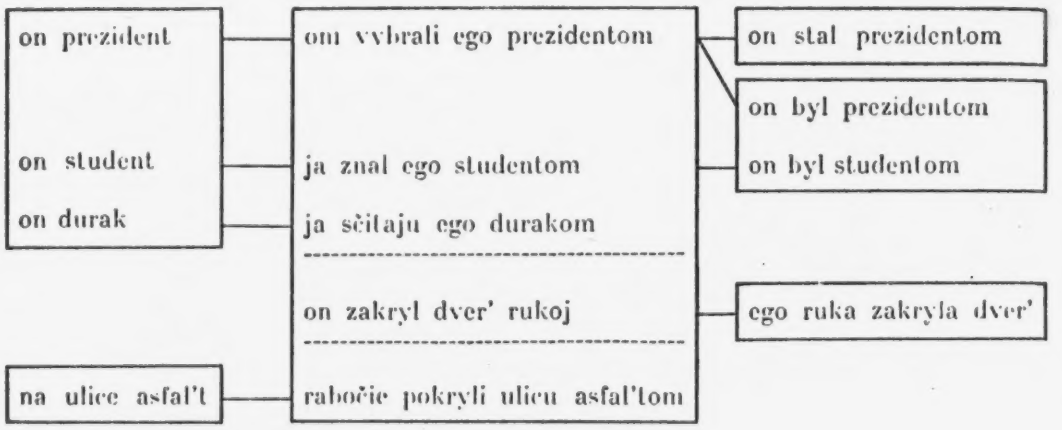
4.2. The transform features of S^1_n V S^2_a S^3_i units can be summarized in tabular form as follows (units in which S^2_a can → ø are omitted):

TABLE 4A: TRANSFORM FEATURES OF S^1_n V S^2_a S^3_i UNITS

T: →	S^2_a → ø	S^2_a # S^3_a	S^2_a stal- S^3_i	S^2_a byl- S^3_i	pS² S^3_a	u S^2_x S^3_a	S^3_a S^1_x V S^2_x	S^3_i → ø	
	—	+	+	+	—	—	—	+	oni vybrali ego prezidentom
	—	+	—	+	—	—	—	+	ja znal ego studentom
	—	+	—	—	—	—	—	—	ja sčitaju ego durakom
	—	—	—	—	—	—	(+)	+	on zakryl dver' rukoj
	—	—	—	—	—	—	+	+	on udivil nas otvetom
	—	—	—	—	+	—	(—)	(—)	rabočie pokryli ulicu asfal'tom
	—	—	—	—	+	+	—	—	tetja nadelila menja nasledstvom

4.3. The network of correlated transforms into which units of type S^1_n V S^2_a S^3_i enter can be represented schematically as follows (certain minor groups are omitted):

TABLE 4B: TRANSFORM NETWORK OF S^1_n V S^2_a S^3_i UNITS



5. PHRASE TYPE Vø S_i.

5.1. Units of type Vø S_i, e.g. *zaleklo krov'ju* 'blood began to flow', *sverknulo rjab'ju* 'a ripple flashed', *xolodom pašet* 'there's a breath of cold', *paxlo osen'ju* 'it smelled of autumn', are formally characterized by the fact that V can occur only in neuter past or third person singular non-past (formally, the transformation T: Vø → V is impossible, e.g. *produvalo vetrom* 'a puff of wind blew' → **produvaem vetrom* 'we blow with the wind' or → **produvali vetrom* '[they] blew with the wind', etc.). There are two subgroups of type Vø S_i unit, according to whether or not a personal transformation T: → S_n V is possible, e.g. *zaleklo krov'ju* 'blood began to flow' → *krov' zalekla*, but *popaxivaet dymom* 'it smells a bit of smoke' → **dym popaxivaet* 'smoke smells a bit'.

5.11. Units for which the personal transformation T: → S_n V is possible occur with a small number of verbs expressing physical and usually visible actions, e.g. *zaleklo krov'ju* 'blood began to flow' → *krov' zalekla*, *produvalo vetrom* 'a puff of wind blew' → *veter produval*, *sverknulo rjab'ju* 'a ripple flashed' → *rjab' sverknula*, *skosilo gradom* 'the hail cut down' → *grad skosil*.

5.12. Units for which T: → S_n V is impossible occur with verbs expressing the transfer through the air of (a) an odor, e.g. *degol'kom poljanulo* 'there was a smell of tar', figuratively *paxnet vesnoj* 'it smells of spring' or (b) cold, damp or other touch-perceived sensation, e.g. *povejalo syrosl'ju* 'there was a breath of dampness', *proxladoj dunulo* 'there was a puff of coolness'.

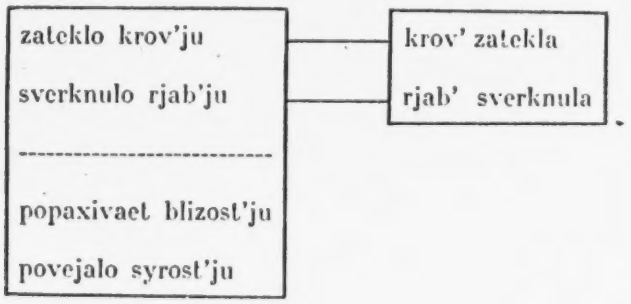
5.2. The transform features of Vø S_i units can be summarized in tabular form as follows:

TABLE 5A: TRANSFORM FEATURES OF Vø S_i UNITS

T: → Vø → V	S_n V	
—	+	zateklo krov'ju
—	—	popaxivaet dymom

5.3. The network of correlated transforms into which units of type Vø S_i enter can be represented schematically as follows:

TABLE 5B: TRANSFORM NETWORK OF Vø S_i UNITS



6. PHRASE TYPE S^1_a Vø S^2_i.

6.1. Units of type S^1_a Vø S^2_i, like the type Vø S_i units discussed in 5., are impersonal constructions characterized above all by the impossibility of changing the verb to a personal form agreeing with a subject, e.g., *šljapu uneslo vetrom* 'the hat was carried off by the wind' → **šljapu unesut vetrom* 'they will carry the hat off with the wind', → **šljapu unesla vetrom* 'she carried the hat off with the wind', etc. In some cases, however (specifically, where S^2_i refers to an object which can be at the disposition of human beings), a transformation to what might be called an anonymous construction (with subjectless third person plural verb form) is possible, e.g. *otca pereexalo avtomobilem* 'father was run over by a car' ('it ran over father...') → *otca pereexali avtomobilem* ('they ran over father...').

6.11. In all units of type S^1_a Vø S^2_i the personal transformation T: → S^2_n V S^1_a is possible, e.g. *otca ranilo oskolkom* 'father was wounded by a fragment' → *oskolok ranil otca* 'the fragment wounded

father', *lodku razbilo burej* 'the boat was smashed by the storm' → *burja razbila lodku* 'the storm smashed the boat', *luga zalilo vodoj* 'the meadows were flooded with water' → *voda zalila luga* 'water flooded the meadows'. Since all S^1_a Vø S^2_i units can be derived from S^2_n V S^1_a correlates, but not vice versa, the impersonal constructions must be considered derivations from the 'personals'.

6.12. In a few cases the S^1_a Vø S^2_i unit is characterized by the possibility of a further transformation T: → S^1_n V_s S^2_i, e.g. *luga (acc.) zalilo vodoj* ('the meadows it flooded with water') → *luga (nom.) zalilis' vodoj* 'the meadows were flooded with water' (cf. 1.114 above).

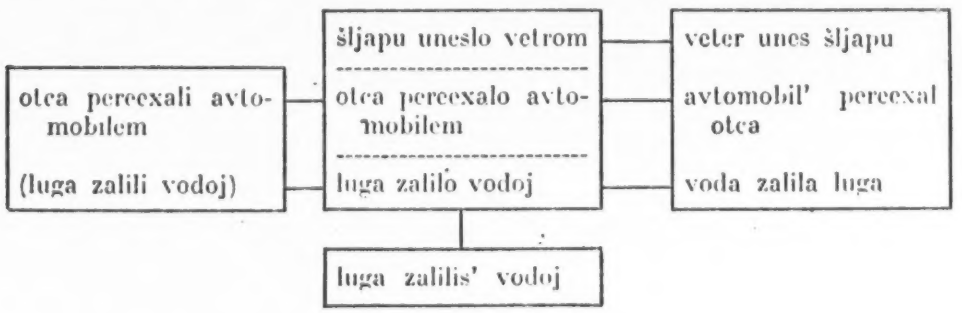
6.2. The transform features of S^1_a Vø S^2_i units can be summarized in tabular form as follows:

TABLE 6A: TRANSFORM FEATURES OF S^1_a Vø S^2_i UNITS

T: ↑	Vø → V	V S^1_n	V_s S^2_n	V_s S^2_i	
	—	+	+	—	šljapu uneslo vetrom
	—	+	+	—	otca pereexalo avtomobilem
	—	+	(+)	+	luga zalilo vodoj

6.3. The network of correlated transforms into which units of type S^1_a Vø S^2_i enter can be represented schematically as follows:

TABLE 6B: TRANSFORM NETWORK OF S^1_a Vø S^1_i UNITS



7.0. CONCLUSION. The traditional approach to Russian syntax, an example of which was given in 0.1, has a number of weaknesses, the most obvious of which is the absence of consistent classificatory criteria. Groups are described on the basis now of substantive

meaning, now of verb meaning, now of some combination of the two; the presence or absence of other modifiers, the degree of concreteness or abstraction of verb and substantive, the morphology of the verb itself (reflexive or not, passive participle or not), and the degree of semantic identity between verb and substantive are all determining factors in one or the other group. To the very large extent to which this traditional approach is based on meaning clusters alone, it suffers from further weaknesses. For one thing, given the enormous variety of individual word meanings and the difficulty of labeling these with precision, a classification based on groups of similar meanings must employ labels which are themselves very imprecise; to attain an interesting degree of generalization (i.e., to set up large enough classes), this classification must use labels of almost meaningless imprecision (e.g., the class label "objective" covers such variegated combinations as *paxal' traktorom* 'cultivate with a tractor', *nadelil' talantom* 'endow with talent', *ševelil' gubami* 'move one's lips', *poražal' krasotoj* 'astonish by one's beauty', *nabil' senom* 'stuff with hay', *ljubovalʹsja prirodoj* 'admire nature', *upravljal' buksirom* 'run a tugboat').[53] Further, a classification of word-combinations based on the meanings of the words contained therein would seem dangerously circular, since the meaning of each word itself depends at least partly on its context, the most important part of which are those very words with which it is syntactically connected.

Perhaps the major flaw in the traditional approach, however, has lain in the fact that it has divorced meaning from form, and in so doing has departed from the realm of the demonstrable fact to enter that of the unprovable assertion. The discussion of differences of meaning and of semantic clustering is surely a fascinating endeavor, but as long as such discussion does not occur within some statable formal framework, it is hard to see how it can culminate in a convincing description. Transformation analysis provides this formal framework, using a classificatory procedure which is uniform throughout the entire analysis, and all the class labels and semantic interpretations of which are firmly grounded in demonstrable formal features. It substitutes for semantic generalizations a genuinely formal description; this is accomplished by expanding the concept of form itself and

[53] One suspects that this is a catch-all category consisting mostly of combinations which cannot be squeezed into the rubrics "temporal" and "spatial," the meanings of which are more homogenous and the formal characteristics of which more obvious.

by recognizing the existence of a different level of linguistic structure.

While the formal rigor of transformation analysis would by itself be a sufficient justification thereof, this approach has a number of further advantages. In some cases it produces more refined groupings, recognizing subtypes beyond the reach of traditional methods, e.g. the division of S^1_n V A_i S^2_i phrases into semi-adverbial and non-adverbial (*on kričal gromkim golosom* 'he shouted in a loud voice' → *on gromko kričal* 'he shouted loudly', but *on vzgljanul uzkimi glazami* 'he glanced up with his narrow eyes' cannot → **on uzko vzgljanul* 'he glanced up narrowly') in 3.121, or the establishment of the two categories "true instrumental" and "instrumental of resultant contiguity" (*on udivil menja otvetom* 'he astonished me with his answer': *oni posypali rel'sy peskom* 'they sanded the rails'). In several cases transformation analysis permits a type of sentence analysis impossible with older methods, for example the derivation of certain predicative constructions from combinations of two predications, e.g. *Ivan vernulsja starikom* ← *Ivan vernulsja*+*Ivan byl starikom* in 2.1211, and is apparently the only explanation of syntactic homonyms such as *ja znal ego studentom* 'I knew him as a student' (either 'when I was a student' or 'when he was a student'), cf. 2.1211, 4.113. It may provide additional syntactic characteristics of categories defined on other levels, e.g. the interrelation of perfectivity in verbs and animation in substantives expressed in the transform features of such phrases as *sčet soslavljaetsja buxgalterom* 'the account is made up by the bookkeeper', 1.112, or demonstrate the syntactic parallelism of phrases of quite different morphological structure, e. g. the impossibility of T: A → ø reductions in certain types of S^1_n V A_i S^2_i and S^1_n V S^2_i S^3_g phrase (*on govoril spokojnym tonom* 'he spoke in a calm voice' ≃ *on govoril tonom nastavnika* 'he spoke in the voice of a tutor'), 3.1, or the irrelevance of the presence or absence of *-sja* in such transformationally identical pairs as *Ivan priexal starikom* 'John arrived an old man' ≃ *Ivan vernulsja starikom* 'John returned an old man' or *on govorit tixim golosom* 'he speaks in a soft voice' ≃ *on vyražaetsja tixim golosom* 'he expresses himself in a soft voice', cf. Tables 1a, 2a. Further, transformation analysis provides the most consistent formal framework for describing whether or not certain types of modifier are obligatory (by giving a yes-or-no answer to the question whether, e.g., T: A_i → ø is possible for phrases like *ona govorila*

vysokim golosom 'she spoke in a high voice') as well as for describing restrictions on the type of modifiers which can be added to certain phrase types (by answering whether or not T: ø → A is possible, and if so, for which classes of A, etc.). Although deliberately chosen to avoid non-formalized semantic generalities, it may even suggest the existence of new semantic categories, e.g. thè "bipolar visible quantifiers" of 3.1212. Even where a classification by transformation features produces groups identical to those of traditional classifications, it provides those groups with specific formal characteristics, e.g. the restrictions on T: ø → A transformations in the group containing *on pokačal golovoj* 'he shook his head', 2.1111; the fact that there are a number of such cases suggests that the traditional semantic classifications were in part based on formal features unrecognized at that time and perhaps unrecognizable except through transformation analysis.

7.1. TRANSFORM POTENTIAL. Perhaps the greatest single advantage of an analysis in terms of possible and impossible transformations is that it reveals the existence of a level of linguistic form superior to that of mere morphological description. It has been shown that within each morphologically defined phrase type there exist from a few to several transformationally defined sub-types, each of which is characterized by a particular set of transformations. The possibility of being transformed to all and only the members of a particular set of correlated phrase types can be called the transform potential of a sub-type. This potential is inherent in the sub-type and is as much a formal characteristic thereof as, say, the fact of belonging to a particular set of correlated morphemes is characteristic of membership in a certain word class. Each of the individual transformational possibilities or impossibilities which make up the total potential can then be termed a distinctive feature of transform potential ("distinctive," of course, because one such feature is enough to distinguish between otherwise identical sub-types). As transformational analysis uncovers the sub-types of all morphological phrase types in Russian, there will probably appear certain transformations of fundamental importance, whereas others will be seen to be of secondary or even redundant nature. Only after such a complete analysis has been effected and the set of basic kernel phrases and fundamental transformations established will it be possible to begin building up a complete syntax of Russian. This complete syntax will have to describe (1) a set of minimal sentence

types and (2) a set of transformations by which these minimal types can be expanded (T: ø → F), altered (T: F → F′), and combined (T: F+F′ → F″) to form the actual sentences possible in the language. The present discussion is offered as a step in the direction of such a syntax.

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